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SOME ASPECTS OF WILDERNESS PERCEPTION
IN ALBERTA

BY



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A THESIS

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The undersigned certify that they have read, and recommend
to the Faculty of Graduate Studies and Research for acceptance, a
thesis entitled

SOME ASPECTS OF WILDERNESS PERCEPTION IN ALBERTA
submitted by F. Joseph Eley in partial fulfilment of the requirements
for the degree of Master of Science.

ABSTRACT

The development of the concept of wilderness in North America is reviewed, with a survey of values of wilderness, and pressures against its preservation. The place of perception in wilderness management is briefly reviewed.

In order to survey public perception of wilderness in Alberta, an unstructured questionnaire was used to interview 129 people in Edmonton, High Level, Castor and Rimbey. In Edmonton, respondents covered a wide range of education level, economic status, occupation and location of residence with respect to green areas and manufacturing and warehouse districts. The small towns range from High Level, a new town in a remote, forested area, to Castor, a long-established (by Alberta standards) prairie agricultural trading centre.

The commonly reported concept of wilderness was that of places uninhabited by men; isolated from towns and cities; and untouched by man. A few respondents identified it with desolate areas such as desert or tundra, and a number of others identified it with forests. National Parks were commonly used as examples of wilderness, and occasionally used to define it. Seventy percent of the respondents had been in places they considered wilderness. These wilderness experiences included many half-hour hikes on berry-picking expeditions or other explorations within earshot of a road. A wide range of occupational wilderness experiences were reported,

from a fur trader walking the northern forests, and farmers who cleared land for their farms, to modern oilmen on all-terrain vehicles.

Wilderness is valued for the recreational opportunities it provides to get away from society and urban life, as well as for the attractions of the beauty of natural vegetation and wildlife. It is also valued as a preserve of natural environments for the education of children. A few respondents valued wilderness for the preservation of wildlife from extinction in their natural forms. None mentioned its benefit to science.

Respondents with university education, or with managerial or professional occupations wanted wilderness preserved for the recreational opportunity it provides. People with grade-school education, or with low-paying occupations tended to favour development of economic natural resources on all land, rather than preserving any of it as wilderness. Twelve percent of the sample saw no value in wilderness preservation and felt that society would benefit more if all natural resources were developed.

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INTRODUCTION

Wilderness has a special place in the general picture of land management in North America. Four centuries ago, as the first Europeans arrived, it constituted most of the land on the continent, untouched by man. At present, men have reached almost all parts of this continent, and have left their marks on much of it. Wilderness has become that portion of the land which is protected from most of man's activities.

Wilderness, or land area where natural environments are preserved, is the last refuge for a number of bird and animal species. It is also a place where some people find a special personal re-creation, in its complete change of environment from an urban life or people, concrete and machines. Preserves of natural environments enable scientists to determine how nature handles the problems of survival of plants and animals. Some of these solutions will help men to survive longer, and some of the preserved species will help them to live better.

The remaining wilderness areas in North America are under many pressures which threaten their survival. Agriculture and livestock grazing continue to slowly expand; mineral exploitation and exploration make their small marks on otherwise untouched land; in the 48 contiguous states of the United States, roads are so close together that only in a few small areas in the west is it possible to get more than 10 miles from one. Even the people who benefit most from preserved wilderness, the vacationers who get that

special wilderness recreation on hiking and canoe trips through it, are becoming so numerous they threaten to destroy what they cherish.

Wilderness suffers and benefits from the way it is perceived by various sectors of society. Those who see it as untapped natural resources of minerals, timber or grazing land are constantly pressing for its development; while those who see it as a last resort to nature from an increasingly urban and technological society defend its preservation. Even management of wilderness preserves is affected by the way they are perceived. Great scenes like the Grand Canyon are made available for viewing from their perimeters, while rugged mountains may seem best utilized by small groups of hikers or canoeists, or simply preserved except for occasional traverses by scientists.

North American wilderness is almost all public land, which means that its preservation is the result of management action by government on behalf of all the people of each country, province or state. The perception of vacationers in wilderness areas has been studied by a number of investigators in the past two decades. Very little has been done to determine how it is perceived by the remainder of the public, most of whom have not used officially-recognized wilderness preserves for a vacation. In this study an exploratory survey is made of the perception of wilderness amongst the general public in Alberta.

CHAPTER 1

THE CONCEPT OF WILDERNESS

Wilderness, or wild country has a special relationship to men. It is land which man does not control, either by design or default, and given man's propensity to interfere with his environment, it often presents a temptation. Some people enjoy a special sort of recreation in wilderness, but its value to most of society lies in its existence as uncontrolled nature, outside of man's usual paths. In order to discuss the values of wilderness in detail, a definition of the concept is needed.

For purposes of this discussion, wilderness will include all land areas which have not yet been settled on or disturbed by agriculture or industry. It may be extended to land where man's influence has been completely replaced by natural processes. In discussions of wilderness recreation, wilderness will occasionally be simply what is perceived as wilderness by recreationists.

An example of the first extension is land which has been cleared of natural vegetation and used for agriculture, then abandoned. Eventually this will be re-colonized by natural vegetation. The length of time required for complete re-colonization will depend on the type of climate and vegetation and the degree of disruption caused by the agricultural operation. In a humid tropical climate, natural vegetation completely re-colonizes in a period of a few weeks to perhaps two years. In the Arctic, on the other hand, re-

colonization by meager Arctic vegetation will require many years, and in some cases centuries (ref. Bliss, 1956 and Britton, 1957).

In very dry climates, man has been held responsible for some irreversible changes to the land. Grasslands have been turned into deserts as cultivation allowed the fertile soil to erode away (Dasmann, 1968). A number of researchers have studied what recreationists perceive as wilderness. They found that people who travel off roads to enjoy wilderness say they are looking for undeveloped natural country, difficulty of access, lack of roads, and isolation from other people (Merriam and Ammons, 1968). The latter factor seemed to be the principal criterion for quality of wilderness experience, as judged by wilderness recreationists, once they were in an undeveloped natural area. For both canoeists in the Boundary Waters Canoe Area of Minnesota and Ontario (Lucas, 1964) and hikers in Canadian mountain national parks (Juurand, 1971), the quality of their recreational experience correlated most closely with this factor.

Wilderness recreation may be a state of mind in which a person feels he is in contact with nature. When a person is in a place which helps him to achieve this feeling, he may consider that place to be wilderness, or a piece of wilderness. It may be a few square feet of undisturbed vegetation or a tract of thousands of square miles of nearly undisturbed natural environment, in which a person could also feel completely out of touch with the society of his fellow man.

The size of an undeveloped natural area required for a place to be perceived as wilderness has not been precisely measured. It seems to depend on whether or not any boundaries to the wilderness can be seen by the observer while he is in the area. An extensive survey of vacationers in wilderness recreation areas in the United States found that no particular size of natural area was too small to be perceived as wilderness, yet most of the vacationers interviewed thought that a "small" area would not seem to be "real" wilderness (ORRRC Study Report 3, 1962).

Values of wilderness

A number of values to man, both individually and collectively, have been recognized in wilderness. It provides a unique recreational opportunity, in which today's urbanized population may achieve a complete break with their day-to-day urban existence. The physical existence of undisturbed natural environment allows scientists to study the processes nature uses to solve survival problems. Preserves or reserves of wilderness constitute a way of managing land for various economic reasons, such as protection of watersheds or preserving the land from misuse in some other way. The existence of wilderness has inspired philosophical consideration of man's origin and of his present condition. Some of these values are described in more detail below.

Before discussing the value of wilderness to man, the value of wilderness in itself should be examined. It may be considered to have a right to exist, with all the wild species of flora

and fauna that it harbours, just as man considers himself to have a right to exist as a species. The greatest champions of wilderness preservation have brought out this idea at one time or another. For example, in the 19th century, Thoreau asked in one of his public lectures: "why should not we...have our national preserves...in which the bear and panther, some even of the hunter race, may still exist, and not be 'civilized off the face of the earth'..."

(Thoreau, 1858). Aldo Leopold, in the present century wrote of a "land ethic" which "changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it." He goes on to point out that it "implies respect for his fellow-members, and also respect for the community as such." (Aldo Leopold, 1949).

Recreation: Perhaps the best-known value of wilderness to man is the opportunity it provides for a complete change from the day-to-day life of North America's largely urban population. It replaces the sights, sounds and smells of people and industry with those of the natural environments of forest or deserts, among others. It often replaces a complex relationship between the individual and many other people and organizations, with a relationship between the individual and a natural physical environment. In the latter, it makes the person wholly dependent on himself, rather than inter-dependent with other people, and thus allows him to find out what he can do for himself.

Wilderness recreation usually means travelling in a wilderness area by some non-disruptive means, such as walking, canoeing, or on a horse, and living there for a few days with a minimum of

supplies and equipment. Such recreation may include hunting or fishing for food or sport. The less mechanized forms of travel and sustenance put the individual more on his own and less in contact with his urban background, thus emphasizing the differences between the city and the wilderness. Living without all the facilities of the modern city gives the vacationer a chance to test his own powers of survival and to become intimately acquainted with the wilderness.

Wilderness hikers and canoeists have written of the power of such experiences in changing a man's character. John Muir, founder of the Sierra Club, spent most of his life in the late 19th and early 20th centuries walking over wilderness areas in North America. He advised his readers to: "Climb the mountains and get their good tidings...Nature's peace will flow into you as the sunshine into the trees. The winds will blow their freshness into you, and the storms their energy, while cares will drop off like autumn leaves." (Quoted in Nash, 1967). A more recent writer gives another insight into the effect on personality of wilderness travel: "How does the [canoe] trip affect your personality? Allow me to make a fine distinction, and I would say that you return not so much a man who reasons more, but a more reasonable man. For, throughout this time, your mind has learned to exercise itself in the working conditions that nature intended. Its primordial role has been to sustain the body in the struggle against a powerful universe." (Trudeau, 1944).

Vacationers have been interviewed in wilderness areas on what appealed to them in wilderness recreation. Bultena and Taves (1961) interviewed canoeists in the Boundary Waters Canoe Area (of Minnesota and

Ontario) in 1956 and 1958. The appeal most frequently volunteered was that of adventure and exploration, with wilderness as a locale for sport and play second. When asked to choose from a list of benefits of wilderness recreation, the one most frequently rated 'very important' was "the opportunity to leave all the cares of the workaday world behind" (48 percent of respondents). This was followed by: "helps to gain experience in doing things by one's self" (32 percent), "helps develop foresight and ability to plan" (30 percent), "helps one to get close to the Creator" (30 percent), "is something new and different" (25 percent), and "provides physical reconditioning" (24 percent).

A 1960 study in a number of wilderness areas in the United States similarly asked vacationers to rate a list of possible wilderness appeals. Those most frequently rated as "most important" were: "to observe the beauty of nature," 28 percent of respondents; "to get away from the sights, sounds and smells of civilization," 7.3 percent; and "to get away from the demands of the work-a-day world," 12 percent (ORRRC Study Report 3, 1962). These results agreed with the previous study in showing that wilderness recreation meant to vacationers a chance to "escape the familiar routines and cares associated with living in an urbanized society" (Bultena and Taves, 1961). The recreationists in the first study rated character building important to a certain extent in that they appreciated the opportunity to learn to do things by themselves. Although many people considered that in wilderness they were 'closer to God', or 'in the setting of American history', these were seldom the primary

appeals of wilderness recreation.

Appreciation of the beauty of nature is a recreational activity which involves nature and observers, but not necessarily at close quarters. It is likely of course that nature is best appreciated by those who immerse themselves in it for a week or more at a time, through, for example the wilderness recreation described above. Wilderness vacationers interviewed in the above-mentioned studies certainly thought appreciation of the beauty of nature was an important part of their experience. There are, however, those who consider that nature's beauty, especially in the broad sweep, can be appreciated from a point of view outside of the nature preserve, such as a lookout point on a mountain road, or the rim of Grand Canyon. In a nation-wide (United States) newspaper's questionnaire about United States national parks, some 25 percent of respondents favoured a proposal for aerial tramways to allow people with limited time or hiking ability an opportunity to see the wilderness parts of the parks (Cahn, 1968). Apparently these people expected a tramway view, much as a car-window view, to be a valuable look into nature. The respondents in that survey were not necessarily representative of either park users or the general public, but were simply readers of that newspaper who answered the questionnaire.

It has been suggested that wilderness can have value to society without being directly seen or visited by most people. Wallace Stegner (1960), points out that from the present and future

generations, only a small proportion will have an opportunity to visit a wilderness area. He argues however, that the very idea of wilderness can be appreciated by society as a whole. The wilderness idea will have its value only if it is backed up by the physical preservation of some land in its natural condition. Stegner considers partially wild land such as forest recovering from logging, or a re-vegetating mine site, to be part of the wilderness worth preserving for the benefit of society (Stegner, 1960).

Wilderness provides a background against which man can see the effects of his progress. It provides a background of the environment of the beginnings of culture, against which to view man's cultural progress. Scientists have not completely determined how man evolved in his natural environment, and wilderness preserves provide a last chance to see that natural environment and its effects. These preserves also provide a base for a measure of man's effect on his environment.

Scientific: Ecology is the study of the relations between plants and animals and their physical environment. Ecosystems are systems of plants and animals which have developed in response to particular environments. Preserved examples of natural ecosystems which pre-date man make possible a measure of the changes man has caused on land which bore similar ecosystems before his arrival. Wilderness preserves will serve in the future as a reference or standard against which to measure the continuing effects of man's activities on various sorts of land. For example in Alberta, most of the area of

natural prairie has been either cultivated, or subjected to heavy grazing by domestic livestock. Examples of the prairies in their original condition can be seen only in a few small areas of the major river valleys and parts of military reserves. Most of the 900 square miles of Suffield military reserve has been used only to isolate dangerous experiments, and has thus remained nearly untouched by man. It is the largest preserve of the prairie ecosystem type in Canada. This preservation will not continue if the area is used for more disruptive regular military exercises.

Studies of ecosystems undisturbed by man show how plants and animals react to natural forces in their efforts to survive. By taking advantage of natural processes rather than working against them, the economic value of land use can often be increased while minimizing the interference to the ecology of land outside the management area. For example, using one insect species to control another which is its natural prey is less likely to cause problems outside the area of treatment than a chemical spray. Such a technique however, can only be introduced when both types of insect are thoroughly understood in their natural environment.

Economic and social: Wilderness can in some instances provide the best use of the land in purely economic terms. One of the clearest examples is the case where a river will benefit from the protection of its watershed from disturbance. The deep soil and leaf litter under forests provide a reservoir of rain and melt waters, releasing them into the river in a more even flow than if they were to fall on

cultivated soil or bare rock. A stream with a regular flow has much higher economic potential than one which flows for only part of the year.

The forests of the eastern slopes of the Rocky Mountains in Alberta provide this sort of storage for rivers which are used for both hydroelectric power production and irrigation as they flow across the prairies of Alberta, Saskatchewan and Manitoba. The steadier flow of these rivers increases their value for both these purposes, while reducing the sizes of reservoirs required to fully utilize their flow.

Wilderness may be preserved to allow large numbers of wildlife to survive and thrive for both aesthetic and economic reasons. Aesthetically, wild animals are often considered more beautiful or aesthetically pleasing in their natural habitat than in captivity. Furthermore, extinguishing species in their natural form is stigmatized, even if examples of the species survive in captivity or domesticity.

The harvesting of wild animals for meat may be a more efficient way to produce food from some types of land than cultivation or herding. The harvesting itself is often expensive because of the areas to be hunted for the animals, but little other work is required. In the Canadian Arctic for example, where cultivation is on the whole impossible, Caribou make best use of the land by migrating hundreds of miles each year between winter and summer range. Herding the animals results in either great expenditures of

human effort to move the herd between winter and summer pastures, or over-grazing of a small area within a short distance of the herder's base and under-use of the remainder of the land (Scotter, 1969; Leopold and Darling, 1953).

Moose and elk, ranging freely through the boreal forest of Alberta (see Figure 2), can produce meat at far less expense than could a cattle operation in the same climate. The wild species live on browse unpalatable to cattle and use land inaccessible to domestic cattle, such as water chest-deep to a moose. Cattle thrive best on grasses, which grow poorly on boreal forest soils, and they require feeding in winter, which means more cultivation of grasses.

In tropical rain forest areas, attempts to plant rows of a single species with bare ground between led to excessive erosion and leaching of soil components. Agriculture succeeded in such tropical climates only by an imitation of the natural wild planting order. A mix of species, planted at random, tends to cover all the soil surface and thus reduces erosion potential. Heavy utilization of soil moisture for evapotranspiration from the plants reduces the amount running down through the soil and leaching plant nutrients from it.

Over his history, man has used, both in cultivated and uncultivated forms, many thousands of species of fauna and flora. All these species were originally found in the wild form, although many new strains have been developed in domesticity. It is impossible to predict which species will be used next as man's

technology continues to develop. Penicillium fungi were a nuisance until it was discovered they could be used to kill some disease organisms. Now these fungi make a significant positive contribution to the standard of living of mankind. New uses were recently discovered for peat-moss, a natural substance, in cleaning up oil spills at sea, and in recovering trace amounts of mercury from waste water. Many other uses for natural species and natural products are continually being discovered.

The preservation of examples of the various types of natural ecosystems in the world will mean the preservation of a vast pool of species not yet used by man, but which may prove useful in the future. The continual evolution in a natural environment will tend to produce species and strains adapted to conditions in their time, rather than to a time in the past when today's domestic species were brought into domesticity.

Pressures on Wilderness

Man's technological development through his history has helped him to become the dominant species on the earth, but it has also been the cause of much pressure on his environment. One of the first major technological innovations was man's development of tools for hunting, which enabled him to hunt large animals for food. The Rancho La Brea tar pits in Los Angeles show evidence of man's hunting technology, and its relation to the rapid decline in the number of species of large birds and animals in the area. Of 54 different species of mammals in the pits, 24 are now extinct; and

of 113 different birds, 22 are extinct. Most of these species became extinct in a 3000 year period following 11,000 B.C., which co-incided with the development of efficient flint hunting weapons (Fisher, 1969).

The invention of agriculture has meant the removal of natural vegetation and its dependent animal communities from the land. They were nearly totally replaced with single species plantings which produced a rich harvest for less work than hunting. This change in the land has been the cause of the extinction of species which could not adapt to the new conditions. For example, in North America the passenger pigeon numbered many millions when the Europeans arrived. It lived on the vast crops of mature stands of timber, especially oak, beech and chestnut. When these trees had finally been cleared by the end of the nineteenth century to make way for agriculture, the passenger pigeon rapidly became extinct because it could not adapt to the new conditions (Leopold, A. Starker, 1965).

The changes due to agriculture often reach beyond the land so used, because of such effects as hunting pressure concentrated around settlements to protect crops, and soil erosion which causes increased sediment loads in streams, and occasionally more dust in the air. Attempts at agriculture in dry grass-covered lands which were easily cleared have, over much of man's agricultural history, led to excessive air and water erosion of soils and subsequent abandonment of such land to become desert. The effect of this has

been a net loss of grass-producing land to both man and wild animals, and the spread of man to yet other lands in search of space to carry out his agriculture.

In the present century, the results of similar mismanagement of soil were seen in the grasslands of North America from southern Alberta and Saskatchewan through the State of Oklahoma. Man's continual drive to expand food production and give people places to live and work led in Alberta to attempts to clear and cultivate forest soils quite unsuited to production of cereal grains. Some of these ventures succeeded, and others failed, but all disturbed the natural environment of the clearings and their vicinities in the process. Thus man's influence was further extended into what would have remained wilderness or near-wilderness.

In recent times man has devised ways of ridding himself of animals he considers pests, such as disease-carrying mosquitoes and flies, or animals which prey on crops and livestock. Chemicals used to kill the insects have been found to affect many other species in man's environment, most of which were not the targets of the original chemical application. For example, the concentration of the pesticide DDT as it was passed up the food chain, led to large predatory birds such as hawks and eagles accumulating fatal doses (Ratcliffe, 1970 and Moore, 1967).

Attempts to get rid of predatory animals have relieved pressure on their natural prey; the resulting increase in prey species sometimes produces more damage to agriculture than the predatory animals caused. An example is the gopher, (a name used

for various species of prairie ground squirrels) the number of which increased greatly, damaging standing cereal crops, when their natural predators, the fox, coyote, and falcon were hunted and poisoned by farmers (Olsen, 1971; Sperry, 1941). The predators were hunted because of the damage they inflicted on poultry and other small livestock.

Wolves and grizzly bears have been hunted because they prey on large livestock and sometimes because of their presumed danger to humans (Murie, 1948). These large predators migrate between areas close to settlements and the deep wilderness areas. Hunting them in settled areas reduced their population in wilderness areas, and allowed their normal prey in those areas to increase. Thus again man has indirectly influenced the ecology of wilderness areas. The usual prey of wolves ranges from very small rodents to large deer. Large increases in the deer population have led to over-grazing or browsing of their range. Damage to some plant communities extends the effect to other animals which depended on the existence of such plant communities.

Perhaps the greatest pressure of man on his environment is due to his ever-increasing population, which is an indirect effect of technological advances to allow people to live longer and to allow food to be produced for more people. This population requires ever-increasing amounts of space to live on and is always seeking new ways to increase food production.

While man's influence is dominant over much of the world's

land area in agriculture, hunting or industry, he appears by some of his activities, in recent times to have spread his influence at least thinly over the whole surface of the earth. Nuclear fallout from hydrogen bomb tests has made measurable differences in atmospheric radioactivity in all parts of the world. Pesticides have been measured in some tissues of animals in Antarctica, approximately 1,000 miles from the nearest place where these chemicals were released into the air and water. Fatty tissues of penguins, seals and one fish species, all of which spend their lives in close proximity to the Antarctic continent, were found to contain 0.10 to 0.44 ppm. of the pesticide DDT in a 1965 survey (George and Frear, 1966).

Man's mobility has increased the reach of his influence. Men have been able to explore nearly all parts of the earth's surface in the past few decades, because of machines which could rapidly move them to areas in which they could not live without support from their usual habitat, as extensive as that is. For example, men have been to the South Pole several times, across hundreds of miles of ice. The first successful trip used dogs to carry supplies, while almost all subsequent trips have been made with relative ease using aircraft.

Man's mobility, in recent times principally by machine, has enabled him to exploit natural resources located far from where they are utilized. Canada's history as a nation was first built around the use of the rivers in trade, exploiting fur-bearing animals, between the coast and the deep interior. Today roads and rail lines are built across difficult terrain to haul out timber and minerals.

Natural resources with high enough prices are carried out by aircraft from places inaccessible by road or waterways. All these activities bring men and machines close to more places which would otherwise have remained undisturbed as wilderness.

Mineral exploitation has also involved widespread geological exploration. Drilling in sedimentary deposits for oil has covered most of the likely land areas and is now proceeding in the shallow seas. For example in Alberta there has been an intense geological survey of the entire province; men and machines have visited nearly every square mile. Cleared survey lines running east-west and north-south, and spaced a mile or less apart, make a grid over the otherwise untouched forest of the north and the foothills. The clearings, while making little difference to the ecology of the area, have increased greatly its accessibility by machine, and of course detract somewhat from the natural appearance of the forests.

Since World War II, automobiles have become a nearly universal form of personal transport, and driving them a popular form of recreation. This has led to a public demand for wider, straighter and smoother roads to allow easy public access to nearly every part of the continent. The roads now use up large amounts of land in all areas, and are conspicuous gashes through major forest areas. By their numbers and their ubiquity, roads have reduced the available wilderness by diminishing the sizes of remaining roadless tracts.

The personal mobility offered by the automobile has taken people on recreational excursions to many places where few people

had been before. The growing wealth and leisure time of North Americans has greatly increased the demand for recreational opportunities in recent decades (ORRRC Report, 1962). Although few people want wilderness recreation of the sort described above, large numbers travel roads through what had previously been relatively undisturbed country. Many walk short distances from roads, town-sites and tourist campgrounds within the nature preserves of national and provincial parks, and the combined effect of their many short excursions covers large areas each year.

The small personal snowmobile, which has recently become a popular recreational vehicle, has increased the ability of those who are unprepared to walk to penetrate wilderness areas. It has become so common that its packed snow trail and frequent presence are causing significant new levels of disturbance to the environment even near settlements and on cultivated land. Deeper into the wilderness, its noise and trails detract considerably from the image of wilderness areas as undisturbed by man. Similarly, other types of small, personal all-terrain vehicles now rapidly take people deep into roadless areas which previously took long walking or pack horse treks to reach. These vehicles go some places that are impossible to reach on foot, or even with a combination of walking and canoeing.

Aircraft have been used by sportsmen as well as mineral explorers and exploiters since the 1920's to reach remote and otherwise nearly inaccessible lakes. The effect of the widespread use

of aircraft for sport fishing and hunting has been similar to their use for mineral exploration. Men and machines are now in or near most places in the vast forests of northern Canada, albeit in small numbers and often intermittently. The hunting and fishing has occasionally had serious effects on some animal populations, but is now as well controlled as that carried out by land transport, only it is more extensive in the area affected.

Wilderness recreation per se has increased considerably in the past few decades as well. More people can afford the time and money to get into wilderness areas, and, as mentioned above (page 5), people now live such urban lives that wilderness recreation is considered "new and different." A recent estimate showed under two percent of the United States population are wilderness users (for recreational purposes) (Hopkins, 1969). Even that low an estimate represents some 4 million people who occasionally take a vacation in a wilderness area in the United States. If perhaps one percent of these people wished to use a wilderness area at any one time, there would be on the order of one square mile of wilderness per user in the United States. Since for many reasons the users would not be evenly distributed, they would find themselves not isolated from each other, and thus missing an important aspect of wilderness as a setting for recreation (see above, page 1). Because crowding is already felt in the United States, Americans are travelling to Canada for wilderness recreation in increasing numbers. Although the Canadian national and provincial parks are vast preserves

of wilderness or semi-wilderness, and the north is essentially some two million square miles of semi-wilderness, this recreational use does add its small part to the load of man's disturbances to this wilderness. The load is felt most heavily in the hiking trail areas of national parks, which are very accessible to wilderness vacationers.

Wilderness recreational activity, because it is expected to cause least damage to natural environments, is allowed in the very heart of wilderness preserves. As the numbers of vacationers increase, even they will cause significant damage, especially in the more fragile ecological systems, such as alpine tundra.

Wilderness for recreational purposes need not follow a rigorous physical definition of undisturbed land, but it must be perceived as such by vacationers. Similarly, land which is perceived as useless for most economic activities may be preserved for its value as wilderness. Perception of land and concepts of its value play an important role in the interactions of man and his environment. In order to discuss the role of perception in the interactions of man and wilderness, it must first be defined.

Perception

The study of perception and attitude is an aspect of geographic research, which overlaps the social sciences of psychology and sociology. The social sciences define perception as the process of giving meaning to sensory experiences; it is almost always used "to indicate those relations of man and his environment which lie midway between the sensations of classical psychology and the

cognitive processes which are usually subsumed under the heading of concepts" (Dewey, 1964).

A concept held by other people can be an important component of an individual's environment, because it affects the way the individual perceives the remainder of his environment. The complex of social concepts is a major part of the environment of people in societies. The perception of these complexes of social concepts, with the perception of the physical environment, constitutes the (perceived) environment of social man.

A geographical definition of perception may be taken as the awareness of, and giving meaning to, any or all features of the social and physical environment of man. This definition will be used for the study described in this thesis.

Wilderness Perception: This study is concerned with the interaction of society and its preserve of natural wilderness. Since wilderness is generally defined, at least in part, as places where few people live or travel, it is likely that many members of the general public will not have seen examples of what they consider wild country. Such peoples' perception of wilderness will be necessarily indirect, and it may consist entirely of a set of concepts communicated through society. Some people should also have some experiences in places they consider wild on which to base their perceptions. In all cases, the concept will depend on how the observer considers his or her own life will be affected by the existence of wilderness.

Attitude

Attitude may be distinguished from perception on the basis of differences in scope, stability and role in behavioural response. Attitudes are more extensive in scope than perceptions, which require the presence of stimulus, and are more permanent and a more consistent determinant of behaviour (Sadler, 1971). Rosenberg and Hovland note that attitudes are typically defined as 'predispositions to respond in a particular way to a specified class of objects' (Rosenberg and Hovland, 1960). Campbell, in a discussion of attitudes (toward social objects), includes in his definition the tendency to view the world in a particular way (Campbell, 1963).

Attitude involves perception of the object of the attitude (White, 1966). Perception is, however affected by attitude, since what is perceived depends on what the individual expects to see as well as the physical object. What is perceived as reality differs from person to person, depending on other factors as well, such as the weather, or the time of day (Sadler, 1971).

Measurement of attitude involves observation of the consistency of behaviour toward a class of objects (Rosenberg and Hovland, 1960). This behaviour may be verbal, such as the response to a series of statements or questions. Questionnaires are often used to measure attitude. Response to a set of questions about presumed behaviour toward an object or set of objects is an indirect measure of attitude. The responses will be what the individual says he would do in a given situation, but not necessarily what he would do, or even what he thinks he would do. The ultimate measure of

attitude is a study of the behaviour itself (Newcombe, 1964). With a questionnaire alone, the only test of consistency of behaviour is between responses to the questions posed.

Wilderness perception and land use

Wilderness protection as a form of land use gives it certain values, as described above, but it also withdraws the land from potential use for other purposes. Land assigned to wilderness should be that which will attain maximum value through this use, while causing minimal reduction in potential values through other uses. In order that land use managers (or land management agencies) may do this, they need to know not only the physical qualities of the area under consideration, but also what the public perceives as the value of each sort of land use, and how it would prefer to attain this value. For example, it may be found that for recreational purposes, the public perceives as wilderness, land with some degree of human disturbance. Such land might then be assigned to wilderness recreation, while land which has no human disturbance whatever could be reserved for scientific study of natural environments.

Withdrawing land from other uses must be acceptable to the public, and thus, land for which the public sees no other value can be most easily withdrawn. Where it is desirable to use as wilderness preserves land which could potentially have other uses, managers may be assisted in educating the public to the potential value of wilderness use, if public opinions and perceptions of that form of land use are well understood.

Many government projects have failed because of inadequate knowledge of public attitudes. In Saskatchewan, very little use is made of the irrigation potential of the Diefenbaker Dam, largely because of farmer attitudes, which could have been determined before construction began. It was known that farmers in the area were not completely willing to change from dry-land to irrigation farming techniques, but the degree of resistance experienced in the actual conversion process was still unexpected by the government agencies responsible for the decision to proceed with the project. The initial 40,000 acre irrigation project remains incomplete, while the prospects for irrigating of the total potential 212,000 acres are now rather dim (Saskatchewan Water Resources Commission, 1969; Eley, 1970).

In another example of the importance of public attitudes in resource management, Swanson described a small project in which a government agency proposed to benefit a small community of farmers by drilling wells to supplement their water supplies. The purpose and management of the project were not clearly explained to these people, and when it was carried out, the local people had it halted during construction. They perceived it as yet another move for political and economic gain on the part of one of the richest local people; they were confirmed in this belief when the first well was drilled on some land owned by that man (Swanson, 1970, pp. 4-6).

The above examples show the weakness of the regular political process of electing members of legislatures, to indicate

public attitudes on particular questions. Although elections are sometimes contested on the basis of one or two issues, these are far removed from many of the decisions that a government is called on to make. Wilderness is an issue on which elections are never contested, yet representatives who did not need to take a stand on it before their constituencies, make decisions on whether or not it will be preserved.

In order to fill in this gap of pertinent information on public preferences, governments occasionally hold public hearings on specific issues. The general public are invited to make their views on the issue known to the government agency responsible for making the decision. Most presentations are made on the initiative of individuals or organizations; there is seldom any particular effort made to obtain a representative cross-section of public opinion, perception or preference on the issue, or even of those most directly affected. Public hearings tend to mainly attract the few people or agencies with both a specific position on the issue, and the inclination to make that position known at a public hearing. Because these are the only witnesses heard, a representative cross-section may not be obtained (MacIver, 1970).

An example of the scant representation of the general public's opinions and preferences in public hearings was noted by Swanson (1970). At the public hearings of the International Joint Commission (of Canada and the United States, concerning such items as common water resources) during a one year period in 1965 and 1966,

two thirds of the witnesses represented government agencies, while the remainder represented only themselves or local organizations, or private businesses. These hearings became a forum for discussion amongst government bodies and a place where they could publicly present their cases (Swanson, 1970).

In order to obtain a truly representative cross-section of the public perceptions and preferences for wilderness, a purposefully designed sample of the public must be contacted; this was the purpose of the present study. The interview technique used is described below in Chapter 3.

CHAPTER 2

DEVELOPMENT OF THE WILDERNESS CONCEPT IN NORTH AMERICA

Historical

The concepts of wilderness considered here are those of the North Americans who migrated from Europe over the past four centuries, and their descendents here. Nash has reviewed European and American writings, both personal and public, from the times of the earliest European migration to American, to discover attitudes toward wilderness among the immigrants (Nash, 1967). He found that Europeans of the sixteenth and seventeenth century felt themselves to be little removed in time from the eras when Europe was roamed by tribes of marauding men and packs of wild beasts. There were still a few places in Europe where men never went for fear of the animal inhabitants, and any other terrors which might lurk there, and there was a general fear of the unknown and the supernatural. Wild lands were associated with both.

The word wilderness, according to several etymological sources quoted by Nash, derives from the Old English and north European words [self-] "willed", or uncontrolled--deor, or animal--ness, a suffix for place. It thus meant 'place of wild beasts', and thus also a place uninhabited by men. The word was used in a fourteenth century translation of the Bible into English, to designate the uninhabited, arid lands of the Middle East, and thus also became

associated with some of the trials of the prophets of Christianity (Nash, 1967).

Arriving on the east coast of America, settlers found a wilderness which required immense efforts to turn into a productive agricultural and industrial country. They also found confirmation of their fears of wilderness in the wild animals and savage people who inhabited this wilderness. The dense forest provided shelter to these often hostile native people and animals for a close attack upon, and a ready escape from, the European settlers.

Perhaps as part of the effort to distinguish itself from the pagan nature worshipping religions, the Christian religion in Europe has until the past two centuries discouraged appreciation of beauty in wild nature. Man was considered to be made in the image of God and thus by right dominant over nature. Far from worshipping it, he should exercise his right of mastery over it. Christianity amplifies the promise of the after-life at the expense of life in this world. Since enjoyment of nature did not lead to a better life after death, it was not considered a virtue, and thus it was not an activity to be pursued.

During the eighteenth century a new concept of wilderness began to develop in Europe among philosophers. Such writers as Edmund Burke and Immanuel Kant wrote theses which argued that the wilder features of the natural world could be as aesthetically agreeable as the comfortable, ordered formal gardens Europeans were then used to admiring. Burke even argued that the terror and

horror in regard to nature stemmed from exultation, awe, and delight rather than from dread and loathing (Nash, 1967).

According to McTaggart-Cowan, "The profound change in attitude toward wilderness [was] an outgrowth of the scientific revolution." The concept of the world as an orderly entity where events could be understood, developed slowly with the advance of science. "The majestic dimensions of this vision led inevitably, in the intellectual climate of the seventeenth and eighteenth centuries, to the concept of a divine mechanism. It was an easy step to seeing the handiwork of God in the beauties of nature..." (McTaggart-Cowan, 1968).

During the eighteenth century wealthy Americans went to Europe for their education, and some wealthy English families sent their sons to America to settle. This trans-Atlantic commerce in education brought the new European thinking on wilderness to America. An example of its product was William Byrd II, an English-educated son of a wealthy Virginia family, who held a position as a surveyor of new territories in the Appalachians. He wrote of his exultation over the beauty of the wild Appalachian Mountains. He and his party were happier to sleep on the ground than in beds, and walked rather than rode through the country they surveyed in 1728 (Nash, 1967).

By the mid-nineteenth century there were a number of native educated Americans who thought in a similar vein. The most prominent among them was the philosopher Henry David Thoreau. Of his move away from his townsmen to relative solitude, he wrote, "I went to the woods

because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived" (Thoreau, 1854). Thoreau's isolation was of course in a relative sense only, since he and his neighbours visited back and forth at least weekly, he was within earshot of a road and within sight of a railroad, and only about three miles from the town of Concord. Nash notes that Thoreau found he loved wilderness, and felt it helped to complete his life, but that it was only a part of an intellectual life which needed also to include civilization. During this time, Thoreau observed the thorough coverage of the country by farmers, hunters and lumbermen. He was one of the first to publicly plead for preservation of at least samples of wilderness. He considered some of this land should be preserved "...not for idle sport or food, but for inspiration and our own true recreation." (Thoreau, 1858).

John Muir was also mentioned above in connection with the recreational benefits of wilderness. Muir spent his life after 1867, when he was 29, exploring America's wilderness and extolling its wonders and beauty for the benefit of whoever would listen to or read him. He was a deeply religious Christian, but he preferred to "read the word of God in nature" to reading it in the Bible (Nash, 1967). He founded the Sierra Club in 1892 to promote the enjoyment of the mountain wilderness of California, and "to enlist the support of the people and the government in preserving the forests and other features of the Sierra Nevada Mountains" (Sierra Club, 1892). That organization is well known to this day for its

activities in publicizing the beauty of wilderness and its work to gain support for wilderness preservation across America.

National Parks

The first proposal for a national park in the United States was made in 1832 by George Catlin. He had spent a few seasons before that year in painting the west, before the advance of civilization should obliterate it. It struck him on his 1832 expedition in what is now South Dakota, that the wilderness in which the Indians and buffalo existed might not have to yield completely to civilization if the government would protect them "in a magnificent park" (Nash, 1967; the latter quote is from Catlin, 1841).

The first of what are today's national parks was established in 1864, when Yosemite Valley was granted to the State of California "for public use, resort and recreation" (United States Statutes at Large, 15). It then became a State Park. This valley of only ten square miles was soon altered by a flourishing tourist-catering business, but the legal precedent of preservation of part of the public domain for scenic and recreational values was important to the subsequent history of national parks in America. An 1890 Act of the United States Congress created the adjacent two million acre Yosemite National Park, into which the Yosemite Valley was legally absorbed in 1906.

Concern over the effects of any commercial development on a natural wonder, the beautiful scenery and natural geysers of Yellowstone, led to the establishment of the world's first national

park there in 1872. The bill for the establishment of Yellowstone National Park effectively created the 3,000 square mile area into a wilderness preserve. The Act stated that: "(The Secretary of the Interior) shall provide for the preservation...of all timber, mineral deposits, natural curiosities, or wonders within said park...in their natural condition." (United States Statutes at Large, 1872; quoted in Nash, 1967).

In 1885 Canada's first national park was established at Banff by a ministerial order. Legislation passed in 1887 was, according to Brown, intended to involve the government in the utilization of all the resources of the reserve of land there, only one of which was the land's recreational potential (Brown, 1968). No mention was made of wilderness preservation, and in fact it was considered that the wilderness would need development to turn it into a park. There was some conflict, however, between utilization of coal and timber resources in the area, and the creation of a beautiful park in this scenic mountain area. Further legislation in 1911 separated the areas to be used as parks and those to be developed for other natural resources (Brown, 1968).

The National Parks Branch was established at that time, and its new head, J. B. Harkin, learned much of forest conservation from the conservationists of the United States. He was also developing an appreciation that "National Parks are reservations of wilderness..." (Harkin, 1918). In promoting the value to the nation of recreational national parks, he said that "Almost everyone who goes

to the wilderness experiences, however dimly, a consciousness of recreation...which answers a need greater than that of mind or body" (Harkin, 1918). Under Harkin's guidance, for the next 28 years the preservation of these wilderness reserves was promoted while only small parts of the park were developed for the use of tourists (Van Kirk, 1969).

The twentieth century and wilderness legislation

During the twentieth century, wilderness preservation has been promoted eloquently by a number of Americans. The American people responded by giving increasing support to proposals to preserve wilderness areas from disturbance, usually with the exception of the sort of wilderness recreation described above (page 4).

Aldo Leopold considered wilderness to be a part of the American way of life, arguing that life in wilderness or on the frontier had shaped the American national character, and the institutions of democracy, of which the American people are very proud. He pointed out that wilderness was not just for pleasurable recreation, but served a very useful purpose in helping to preserve the best institutions in American life (Leopold, 1925).

Wallace Stegner expressed similar sentiments when he said, in part: "Something will have gone out of us as a people if we ever let the remaining wilderness be destroyed...Without any...wilderness we are committed...to a headlong drive into our technological termite life, the Brave New World of a completely man-controlled environment ...We simply need that wild country available to us, even if we never

do more than drive to its edge and look in" (Stegner, 1960).

During the late 1950's legislation to protect some wilderness areas forever was placed before the United States Congress (Nash, 1967). During the long debate over this, those interested in using such places for mechanized recreation or to produce timber were disturbed about the permanence of the reservation proposed. As a counter, David Brower (Executive Director of the Sierra Club) pointed out that civilization was steadily advancing over the last remnants of the world's land and that "the wilderness we now have is all...men will ever have" (U. S. Congress, 1958). The Wilderness Act passed by the United States Congress in 1964 provided for the establishment of a system of wilderness preserves within the lands owned by the United States federal government. Many tracts of land in the National Forest and National Parks were designated wilderness and preserved from all activities except restricted forms of recreation and scientific research.

In Canada, the National Parks are administered as nature preserves for the future enjoyment of Canadians. The idea of wilderness preservation zones within the parks has been proposed, but no definite policy has been enacted on the matter.

The first legislation in Canada specifically intended to protect tracts of land as wilderness, was the Wilderness Areas Act of the Province of Alberta, passed in 1971. This legislation withdraws all natural resources in protected areas from exploitation, and restricts recreation there to travel on foot. The act specifically prohibits leaving any litter behind. This legislation is

weakened somewhat by the provision that wilderness areas designated will not normally exceed 144,000 acres in each instance. The act also specifically establishes a mechanism for withdrawal of lands from designated wilderness areas (Statutes of Alberta, 1971).

Wilderness perception research

During the past two decades in North America, a number of researchers have reported on studies of perception of wilderness by wilderness recreationists. Some of the findings of these researches were reported above (pages 5-6).

A major study in seven wilderness areas of the United States in 1960 drew a profile of the typical wilderness vacationer. That study found that "most wilderness users are men, under 50, married, and living in towns and cities. A majority had travelled over 250 miles to reach the wilderness area. Most are in white collar or professional occupations and customarily have vacations of more than two weeks. Compared with the United States population, wilderness users as a group are of superior education and socioeconomic status. As a rule their family and friends enjoy camping, and most wilderness users plan another wilderness trip on their next vacation." The report went on to point out that "Despite the similarities among wilderness users in the above respects, every wilderness is visited by a variety of people--young and old, married and unmarried, professionals and wage-earners" (ORRRC Study Report 3, 1962).

A 1967 study of trail users in Banff and Yoho National Parks in Canada showed a similar pattern of typical back-country

vacationers. The figures given below are mostly for all trail users in those parks, of whom only an estimated 11 percent penetrated more than 5 miles into the back country (away from roads or settlements along trails). The latter may be considered to be the true wilderness vacationers in these parks.

It was found that 50 percent of the trail users have a university degree, compared to 2.2 percent of the Canadian population in the 1961 census. Forty-five percent of trail users had professional occupations, considerably higher than the 2.9 percent in the 1961 census of Canada. According to the area in which they were brought up, the hikers were significantly more metropolitan than the general population of Canada. A sampling of the non-hiking visitors to the same parks showed they were significantly lower in average education and had significantly less urban background than hikers. Hikers on the more remote sections of the park trail system came from all parts of Canada, as well as the United States (45 percent) and Europe (5 percent). (Thorsell, 1968).

A number of approaches have been made to measuring what is perceived as wilderness by vacationers. A study in the early 1960's in three wilderness or near-wilderness areas of northern Montana investigated the importance of various aspects of a wilderness definition to vacations in the areas. It was found that for off-road users of the areas, a wilderness definition included the following criteria: undeveloped natural country, lack of roads, limited improvements of civilization, and "few people with interests similar

to the [back-country users]" (Merriam and Ammons, 1968).

Roadside campers in the same areas differed from wilderness campers in that they did not feel that staying out overnight was important to their definition of a wilderness experience. They also considered that the wilderness began just off the road, while back-country campers tended to consider they had to walk a few miles off the road before they had reached wilderness (Merriam and Ammons, 1968).

Another approach to measuring perceived wilderness was taken by Lucas, working in the Boundary Waters Canoe Area of northern Minnesota and adjacent parts of Ontario. He and his co-workers interviewed people in locations throughout the area, asking them if they thought the interview locations were wilderness or not. Interviewees were also asked to draw on a map the boundary of what they considered wilderness in this area. From these two sets of data, three fairly distinct wilderness boundaries were drawn, associated with three groups of interview subjects. Canoeists, who seemed to be the wilderness purists there, considered only the inner part of the area, away from all roads, as wilderness. Fishermen with motor boats included a much larger area, readily accessible from roads, in their wilderness area. They did not often travel to the inner part favoured by canoeists. Some of the inner area was rather inaccessible without crossing at least one portage. Forest managers tended to view the official National Forest boundary as the limit of the wilderness area. They are confronted with a map of this boundary in their

daily work, and must solve management problems in terms of the area under a particular jurisdiction. This Forest boundary outlines an area intermediate in size between the perceived wilderness boundaries of canoeists and motor boat fishermen (Lucas, 1964).

In Lucas' study, it was found that while motor boaters like to see other people on the lake in the course of a day's outing, the canoeist is very concerned about his solitude. Canoeists considered their wilderness experience diminished in value if even one other canoe was sighted in a day's travel (Lucas, 1964).

A similar effect of lack of other users of a wilderness area was found in two studies of data on users of trails in Canadian mountain national parks. Thorsell found that 100 percent of the users of a remote trail (in Banff National Park) with an estimated 11 visitors in the 1967 season thought of that place as wilderness. On the other hand only 21 percent of the hikers considered they were in a wilderness on a trail leading out of Banff townsite and up a local mountain, which was used by some 2000 hikers during the season (Thorsell, 1968).

Juurand studied recent trail use data from Banff, Yoho, and Jasper National Parks in an attempt to find out which factors contributed to user satisfaction in their wilderness recreation experience. He found that this satisfaction is inversely related to the number of users on a particular trail. He reported that "This one factor stood out strongly from a field of social, psychological and environmental factors against which an attempt was made

to explain the pattern of user satisfaction" (Juurand, 1971).

One other aspect of perceived wilderness was touched on by the 1960 ORRRC study. Over two-thirds of the respondents in that study thought a small area would not be a 'real' wilderness. 'Small' was, however not defined and the response was fairly consistent between wilderness preserves of widely different sizes, all of which the respondents tended to perceive as wilderness. This indicated that either respondents did not have a clear idea of how small an area could be wilderness, or that interviews were not conducted in an area smaller than the minimum size (ORRRC Study Report 3, 1962).

An important part of the recreationists' perception of wilderness is the sense of isolation from civilization and the completely undeveloped nature of the land. Some wilderness campers however, use rather sophisticated equipment, and keep in touch with civilization by listening to portable radios. Many wilderness perception studies have concerned themselves with the degree of encroachment of civilization acceptable to, or desired by, the wilderness vacationers.

Merriam and Ammons found that wilderness users "tend to adapt accepted modern technology to the wilderness experience." For example, vacationers interviewed in an area which had chalets and trails seemed to think these were compatible with wilderness recreation, while campers in a wilderness without trails were strongly opposed to them. A group of wilderness campers who knew

chain saws were being used in making walking trails considered these machines acceptable within the wilderness area, while the users of the same area who did not know chain saws were already in use, considered them incompatible with wilderness. The latter group were mostly roadside camper, rather than the more avid back-country users (Merriman and Ammons, 1968).

Bultena and Taves found that campers and canoeists in the Quetico-Superior area thought of wilderness as a place to practice living on their own resources, and to get away from the familiar cares and routines of urban living. A large portion of this same sample of vacationers also rated as desirable improvements to the park the installation of additional campsites, toilets, first-aid stations and wells for drinking water. Most of these facilities are inconsistent with wilderness as defined by these same vacationers. Bultena and Taves favoured an explanation of the inconsistency based on the social background of the campers. They came from American cities, where most camping practises and problems are never encountered, and some camping practises are considered repugnant (Bultena and Taves, 1961).

The ORRRC study asked wilderness vacationers if natural resources in wilderness areas should be used, and they found that 65 to 80 percent of those interviewed thought they should be left untouched. Sixty to 80 percent of these wilderness users wanted a minimum of interference with nature in wilderness areas (ORRRC Study Report 3, 1962).

The two studies considered below investigated the opinions

on and perceptions of wilderness and national parks, of the general public, rather than wilderness users in particular.

Towards the end of the summer vacation season in 1968, the Christian Science Monitor published a questionnaire asking its readers' opinions on policies which should be adopted for the United States national parks. The sample simply consisted of those readers of the Christian Science Monitor interested enough to reply, and is not necessarily a good representation of either the United States public at large or the users of national parks. The large number of replies (2192), however, lends some interest to the results.

Cahn reported that replies indicated these readers "want their national parks preserved, even at a cost of personal sacrifice of limitations on park use, and they want the quality of park experience improved for all visitors. They expressed strong support for measures that would:

- Drastically limit stays in the park campgrounds, and charge fees for their use (in addition to entrance fees).
- Provide only narrow, scenic-type roads, with a maximum speed limit of 35 miles per hour.
- Ban automobiles from the park entirely, and provide forms of public transportation. (Cahn, 1968).

Some 86 percent of the respondents favoured development of wildlife management programs in the parks to offset the adverse effect of man's impact. A majority of respondents favoured preservation of all the present wilderness-type areas in the parks. Not all the responses were consistent with complete wilderness preservation.

Some 25 percent favoured a proposal for aerial tramways to allow people of limited time or hiking ability an opportunity to see wilderness-type places in the parks. Forty percent of the respondents also favoured taking out of wilderness areas space for "a few small, primitive chalet-type lodges and youth hotels" (Cahn, 1968).

The results of this newspaper readers' questionnaire indicate the same contradictions noted in interviews of many users of wilderness recreation areas. They want the area to be primitive enough to provide what will seem to them a wilderness experience. They also want a minimum of facilities for safety and convenience in the area, some of which will not be compatible even with the respondents' own image of wilderness.

As a class project, a group of University of Alberta students in a course on resource conservation interviewed 213 Edmonton residents in late 1969 and early 1970. The interview subjects were residents at addresses in blocks chosen at random from within the city.

The interview subjects were asked what they thought of as a wilderness area. It was reported that the majority of the sample felt that a wilderness area was either unoccupied, remote, an area in its natural state, or a combination of these. Some respondents considered National Parks as wilderness areas, and 9 percent also considered unoccupied countryside close to urban areas as wilderness. Seventy-three percent said they had at some time been in what they considered wilderness areas (Students, 1970, Slocombe).

Respondents were encouraged to comment on what they thought valuable about wilderness. The most frequently mentioned aspects were: scenery (27 percent), escape (18 percent), recreation (19 percent), and areas of natural resources (8 percent). These values are similar to those reported above for wilderness recreationists, except for the last, which is seldom mentioned in responses of wilderness users.

The interview also included questions on general wilderness management policy. When asked if any changes or improvements should be made to wilderness areas, 35 percent wanted no change, 25 percent considered more facilities desirable, and 18 percent would put restrictions on human use of this land. A question as to whether wilderness areas should be kept was answered by 85 percent in the affirmative, and by only 2 percent negative. The latter question was put in rather general terms, but it indicates a general sympathy with the concept of preserving wilderness from some types of activities. The respondents in this same sample were also asked if resources within wilderness areas should be utilized. Some 50 percent were in favour of utilization and 44 percent were opposed. Twenty-four percent, or nearly half of those in favour, considered that there should be restrictions on this resource utilization (Students, 1970, Slocombe).

The present study continues the investigation of public perceptions of wilderness and its value.

CHAPTER 3

RESEARCH DESIGN

Objectives

Wilderness preservation is primarily the result of policies and actions of governments. Wilderness preserves are public land which has been set aside from most types of land use to remain in its natural condition. The public may influence the course of wilderness preservation in the future by demanding that governments preserve more or less public land as wilderness or demanding that various types of activities be allowed in wilderness preserves.

Governments will be better able to co-ordinate public demands for or against wilderness preservation, and the best use of public lands, if public perception of various land uses and their values are known. Little is known of public perception of, or attitudes towards wilderness. There is a potential for misunderstanding between land use management agencies and the public because so few people will derive personal direct benefit from it by a recreational visit. Knowledge of perception and attitudes would enable land use managers to choose land for preservation as wilderness to suit the values of the general public. Where such reservation of land does not coincide with immediate public demand, or meet with public approval, knowledge of just how the public does perceive wilderness would better enable land management agencies to educate the public as to the value of wilderness preservation.

Land management agencies responsible for wilderness preserves in Canada and the United States have studied perception of, and attitudes towards wilderness, of recreational users of wilderness areas. Little research has been done, however, on perception of wilderness amongst the general public, on whose behalf all public land is managed. The present study was intended to explore this area.

Research Techniques

In the preceding chapter some of governments' traditional methods of acquiring information about public opinion and aspiration were discussed. An attempt was made here to measure perception of wilderness in a sample of various types of individuals in Alberta. A number of techniques for measuring perception have been devised in social sciences, some of which are discussed below.

The subjects of the study might be taken to areas in various forms of land use and asked to point out which were considered wilderness, and what features of these areas caused them to be perceived as wilderness. This technique was not applied because of the logistic problem of taking a number of subjects to widely separated areas. It was also desirable not to restrict the sample to those who had seen examples of what they considered wilderness, since many members of the public to be sampled may never see what they conceive as wild land.

Various land uses might also have been presented in the form of photographs, or by verbal statements, and the study subjects' reactions to these photographs or statements recorded. The construction

of such statements or the selection of photograph sets assumes a considerable foreknowledge by the investigator of the complete range of ideas about wilderness as a land use which may be held by the study subjects. Such techniques are best used as part of a study in which a number of techniques are being applied to the same study sample. For the present study, a more exploratory technique was considered appropriate.

A structured questionnaire is one in which the range of response to each question is defined. It has the advantage that there are a limited number of responses, and they can be placed in well-defined classes, facilitating statistical analysis of results. It is also possible to make responses to such a questionnaire fit those of other studies, to facilitate comparison of results. Because the possible responses are suggested to the study subject as part of the statement of each question, they may have the undesirable effect of influencing his thinking, and thus his response. Since little was known about the range of responses likely from the subjects of the present study, it was considered more appropriate to use an unstructured questionnaire, with free response to each question.

The unstructured questionnaire used had only a few general questions about wilderness, and the subjects were encouraged to respond with any thoughts on each question as it came up. Their comments on each question at other stages in the interview were also recorded. The responses were difficult to classify for statistical purposes, because they were phrased in a number of different ways,

and meanings overlapped considerably from one respondent to another.

The Questionnaire

This particular questionnaire involved free response in another aspect (see Appendix A). It opened with the subject defining his concept of wilderness, and that definition was used through the remainder of the individual interview. This procedure was used to reduce the influence of the interviewer or the form on the responses of the subject. This procedure does, however, make comparison between subjects or with other attitude studies more difficult, because of the differences in wilderness concept behind the response to each question. It did make possible further analysis of that concept of wilderness from the responses to most of the questions in the questionnaire.

There were two main areas of the questionnaire aimed at determining what was perceived as wilderness. The first was the initial request for a definition of wilderness, with one or more examples. The other was the second question of Section 5, in which the subjects were asked if natural or undeveloped areas near their residence had any meaning in terms of their concept of wilderness. As mentioned above, the respondent's concept of wilderness was used throughout the interview, so that responses to all questions on that subject helped to show that concept.

The exploration of respondents' attitudes toward wilderness included Section 3, on values attributed to it, and Section 4, on activities the respondents would allow there. Attitude towards

wilderness and perception of it interact in each case. The value attributed to it may affect what is perceived as wilderness (for example, wilderness as scenery may be only those places pleasing to the subject's eye) as well as what the subject is disposed to do with it. On the other hand, the value attributed to it will depend on what is perceived as wilderness. For example, if only desert wastes are considered to be wilderness, this land would be considered a preserve of only a very few species of wild animals.

Section 3 concerns the values subjects see in wilderness, preserved as it is. These values are those which do not involve utilization of the physical resources in wilderness areas. Respondents who considered that wilderness areas should be physically exploited answered this question in the negative.

The other questions on the subjects' attitude towards wilderness help complete the exploratory picture of individual attitudes, and allow a comparison of the consistency of responses to the various questions. The question in Section 4 asks what sort of activities should be allowed in wilderness areas. The replies should be consistent with the subject's indicated value for wilderness, assuming that he can relate this one area of its management to his values. In any case, the replies to this question should help complete the picture of the individual's attitude toward wilderness.

Section 5 is an attempt to assess attitudes toward natural, or wilderness areas near which the subject lives. This part at least, deals with something that has physical as well as conceptual meaning for all subjects. In those cases where the subject considers that

there are no natural or wilderness areas near his home, however, these questions cannot be answered. To a certain extent, the response to these questions represents the subject's opinion on the issue of appropriate disposal of public land in his immediate area. For example, in Edmonton during 1971 there was a controversy about whether more ravines in the city should be taken up with freeways or reserved for development as parks, while in the High Level area, the choice for the natural forest land was to leave it, or to clear it for mineral exploitation and farming.

Section 2 of the questionnaire concerns the subject's experience in wilderness areas. It is intended to examine possible correlations between this experience and wilderness perception. It is expected that people who have actually seen such areas and have had an opportunity to form an opinion on the basis of physical reality, may perceive wilderness differently from those whose experience is second-hand. For example, those who have walked or canoed through wilderness for recreation may be expected to value it highly for that purpose.

For this study, residence on farms or in small towns of up to 2000 population was considered rural, while all larger towns and cities were considered urban. Some degree of judgement was required, since some of the places reported in the subjects' backgrounds have now changed considerably in both size and character. Lowenthal (1962) commented that the city dweller seldom distinguishes the pastoral from the wild. A comparison of wilderness perceived by those with

mostly urban and mostly rural backgrounds may help to justify or refute that statement. This information should also help to test the hypothesis that rural people, in constant and often antagonistic contact with the land, are less concerned with the preserving of natural wilderness areas than urban residents.

Sections 6 through 9 question the subject's general environmental concern, his use of vacation time, his hobbies and his associations with sports clubs or conservation groups. These questions are intended to examine the possibility that participation in certain activities and concern for environmental problems might be significantly related to attitude toward and perception of wilderness. Outdoor recreation has been measurably growing in recent years, and public concern for the environment appeared to be also increasing rapidly.

Age, sex, and marital status were noted for each subject, along with the size and age range of the family, if any. Income was not recorded, since occupation and educational level can be expected to clearly indicate socio-economic status. Ethnic origin was also noted to examine the possibility of any correlation between it and attitudes toward or perception of wilderness.

All the interviews were personally conducted by the author, which helped in the interpretation and classification of the subjective, and often very individualized, responses. The interviews normally took 15 to 30 minutes each. In all cases, an attempt was made to keep up a free flow of conversation on the topic.

In seven cases, no response could be obtained for the first question, on the subject's definition of wilderness. This was either due to language difficulty, or because the subject was not used to considering wilderness as an abstract concept. In these cases, if the remainder of the interview could be carried out with a reasonable imposed definition, the replies were used in the analysis of the results of all interviews. If not, the entire interview result was discarded. In most cases it was possible to obtain answers to all questions.

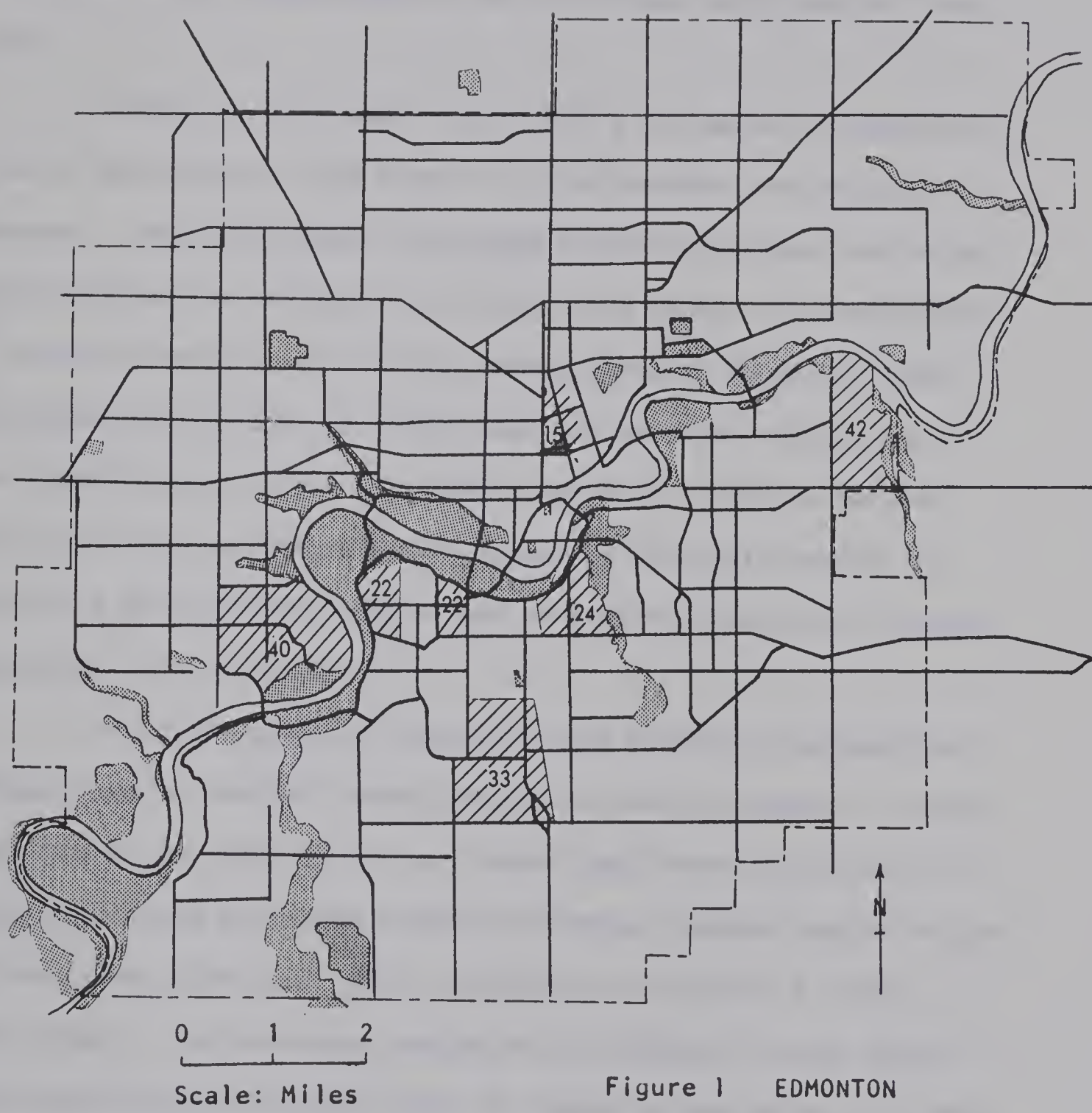
The Sample

The sample consisted of 130 people in Edmonton and three small towns in Alberta. The small towns were included partly to complete the sample of the general population with a semi-rural portion, and partly to obtain a cross-section of residents of areas with various land-use types, as described below. Edmonton was chosen as a large urban centre to represent what is now the urban mainstream of the Canadian population. The 1961 census showed the continuing long-term trend toward urbanization of the Canadian population, with at that time 70 percent of the population in centres of over 1000 and 45 percent in centres of over 100,000. Edmonton was estimated in 1969 to be seventh in size among the major metropolitan areas of Canada. The preliminary report of the 1971 Census gave its population as 490,000 (438,000 for the city alone), or about 2.2 percent of the national population. The 1961 Census figures showed Edmonton's population was slightly above that of Canada as a whole in average

income. A slightly higher proportion (8.6 percent) of the population had some university education than the average of the Canadian population (6.1 percent). Edmonton was one of the fastest growing cities in the country during the decades of the 1950's and 1960's. Eighty percent of the increase was due to net migration, 60 percent of the immigration coming from other countries, principally Great Britain, Germany and the Netherlands. Forty percent of the migrants came from other provinces, mainly Saskatchewan, Manitoba, and Ontario. The immigrants tended to be "fairly well educated, and to [have] skilled or semi-skilled occupation" (King, 1971).

Edmonton's economy is based on the petroleum production and refining industries, and on the government of Alberta's administrative centre. The University of Alberta, with a student population of some 18,000, is an important minor economic factor in the city's economy.

Edmonton is situated on a rich grain and mixed farming area, which was cleared of nearly solid forest in the first three decades of the twentieth century. A deeply incised river valley runs through the city (see Figure 1), and several deep ravines run to the valley within the city. Parts of the river valley and most of the ravine areas have remained undeveloped due to steepness of terrain. A large flood-plain area near the centre of the city has been built over with housing, the city water-works and a power station. Most of the river valley within the city is now used for parks or golf courses, although a developing freeway system has displaced a considerable area of both houses and parks in the past decade. Some of



the ravines have also recently been occupied with freeways. A controversy over further ravine freeways was before the public during the summer of 1971, when most of the interviews were done for this study.

There are many small parcels of a few acres to hundreds of acres of near natural land mixed into the farmland surrounding Edmonton. These are places too rugged to work with machines or too poorly drained for cultivation. There are a number of lakes within 50 miles of the city with a few hundred yards of forest or bush surrounding them. Most of these lakes are used for recreation by city residents, as is Elk Island National Park, 20 miles east of the city. It is a 75 square mile fenced-in area which serves to preserve a herd of wood buffalo, and to provide scenery and lakeside recreation for its visitors.

A cross section of the public was sought to include rich and poor people, the well educated and the poorly educated. Studies of wilderness recreationists have found significant differences in perception of, and attitudes towards wilderness between people divided on those lines (Thorsell, 1970, and ORRRC Study Report 3, 1962, among others). No data were available for Edmonton to show which people specifically had each level of income or education. The 1961 Census did, however, show areas of the city where incomes or the level of education were much higher or lower than the city average. These data were readily available on the scale of the census tract, a unit containing a population of the order of 4,000 to 10,000 people.

They were also available for enumeration areas, units containing 300 to 800 people. It was felt that in the ten years since the 1961 census considerable change may have occurred in any particular enumeration area, whereas the changes would be relatively much smaller in a census tract. The areas for sampling in Edmonton were thus chosen from the census tracts in the 1961 Census.

A further factor considered in the selection of census tracts was their location with respect to the river valley and the ravines in Edmonton. It was considered that people who chose to live near these parks, and in some cases near-natural areas, might be significantly different in their attitudes toward wilderness than people who did not.

An attempt was made to spread the sample geographically over each census tract. In Census tracts abutting the river valley, for example, it was considered desirable to interview both people with a view of the valley and those who could not see the park land from their own property. In a residential area next to a warehouse or industrial area, there may be significant differences between those close to the industry and those whose homes are isolated from it by a few blocks of other homes. To produce a geographical distribution, the sample was portioned out by streets and avenues. With the small total sample used, there were only one or two addresses chosen per street. The addresses were chosen from a list of all the addresses on each street with the aid of a random number table.

In an attempt to increase returns from the selected sample,

an introductory letter was sent to these addresses. The letter included a post-paid form to be returned indicating whether or not the addressee was willing to participate in the study. This method produced over 50 percent favourable replies only in Census Tract 40, an above average income area where the approach was made in May and June. In a low income area approached in June, 1971, and in other areas approached in the fall of 1971, response to this approach was of the order of 10 to 20 percent.

The remaining addresses were approached directly by the investigator. If no one answered the door, or no one was willing to participate, the interviewer proceeded along the block from house to house until a willing respondent was found.

Census Tract 40 was among the highest income areas of Edmonton in the 1961 Census. The highest proportion of its residents were employed in managerial occupations. A substantial portion of its area is on the north slope of the North Saskatchewan River valley, and most of the houses in that portion have some sort of view of the valley. The valley in this part of Edmonton is mostly pasture on the north side, and forest on the south side. There is, however, adjacent to Census Tract 40 a developed park containing a public zoo and a large parking lot.

Census Tract 15 is at the other end of the scale in all of these factors. It has the lowest average family income in Edmonton in 1961. Very few of its residents had managerial occupations, and a high proportion were labourers. It has no view of the river valley

and no parks. Its school playgrounds are all covered with asphalt concrete. Warehouses and light industries form its southern boundary, and are within five blocks of any part of the area.

Census Tract 22 had the highest proportion of university educated residents in the 1961 Census. This area surrounds the campus of the University of Alberta. It is bounded on the north and west by the edge of the North Saskatchewan River valley. Average income in this area is among the highest in the city. The proportion of residents with managerial occupations is in the class with the average for the city.

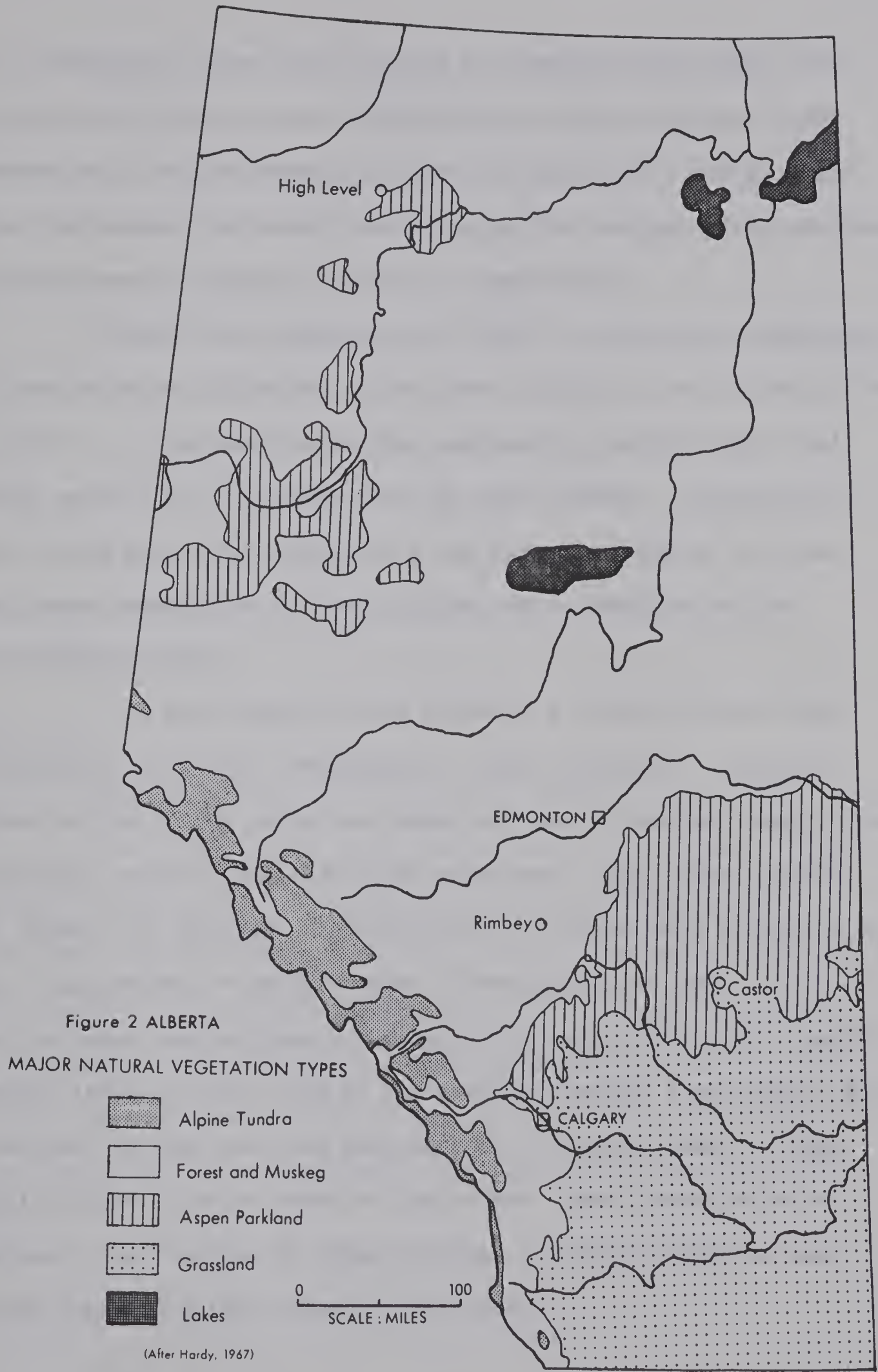
Census Tract 42 is both near the river valley and on the edge of the city next to the petrochemical industrial complex. There is a small, completely undeveloped ravine between the edge of the city and the refineries. Family income is in the same class as the average for the city. This area had the highest proportion of its residents with 3 to 5 years of high school completed. It was near the city average in family income and proportion with managerial occupations.

Census Tracts 24 and 33 are in the same average family income class as the city as a whole. Both are near the city average in education achieved, and slightly below the city average in proportion of the work force in managerial occupations. The river valley to the north, and the ravine to the east of Census Tract 24 are both developed to some extent as parks. Census Tract 24 is one of the oldest parts of Edmonton, and about half its houses were built

in the first three decades of the century. There are large trees in all streets in this area, unlike newer parts of the city. The houses in Census Tract 33 were built during the 1950's and early 1960's. The east side of Census Tract 33 borders on an area of light industry.

Studies of wilderness recreationists have shown that the north and untouched forest land tend to be perceived as wilderness (see, for example, Lucas, 1964). Three small towns in Alberta were chosen to examine the effect of the setting of one's home on his perception of wilderness. High Level is in the northern quarter of Alberta, and is surrounded by almost continuous forest. Castor is in the prairies of south-central Alberta, and is surrounded by cultivated grain farming land. Trees are rare, except for valleys and planted and cultivated rows on farms and in villages. Rimbey is in the transition zone between the parkland (mixed grassland and trees), and the subalpine forest of the Rocky Mountain foothills. Rimbey is also surrounded by cultivated land, but natural groves of trees are much in evidence wherever they have not been cleared.

High Level is a major transportation centre for the very thinly populated northwest corner of Alberta. It is on the only railway and highway leading south from that part of Alberta. It serves oil fields to the west and a small agricultural area to the east. There are three saw mills in the area. High Level was an old trading post consisting of five houses until the railway arrived in 1963. It grew to about 3000 during an oil boom in 1967 and 1968.



Its population is now fairly stable at something under 2000 (preliminary 1971 Census count of non-transient population was 1606). Houses and a few apartment buildings are being built rapidly, and they now account for about two-thirds of the housing. The remainder of High Level's housing is mobile or semi-mobile.

Castor has a population of 1157. It grew to a population of approximately 700 within a few years of the arrival of the railway in 1911. Its residents were then employed in several small coal mines as well as in trading with the local farmers. Although the coal mines have all closed during the last two decades, the town has grown somewhat as a minor trading centre catering to the surrounding region.

The local agricultural economy is mixed grain and beef production, with small components of other products. The Battle River valley to the north, and sandy and poorly drained lands to the south are owned by the provincial government, but leased annually to farmers for grazing. The interviews in Castor were conducted on the long weekend in early October (Thanksgiving holiday), which is in the goose hunting season. During this season there is a considerable influx to this area of recreational hunters from Calgary and Edmonton, to hunt over the many marshes. Sullivan Lake, a large shallow lake 15 miles south of Castor has many square miles of marshes. On the edge of those marshes, a hunting lodge has been established to cater to wealthy sportsmen.

Rimbey was first reported as a village of some 300 residents in the 1921 Census. It remained near that size until 1940, after which it grew to its present size of near 1500. Since about 1910, the land around Rimbey has been gradually cleared of forest and turned to agriculture. In the process, many millions of board feet of lumber have been produced from the cleared timber. Oil and natural gas exploration became extensive in the area in the 1940's. In 1957 a large natural gas processing plant began operation 12 miles north and east of Rimbey. At present, the main industry of the town is agricultural trade, but a substantial portion of the population is now employed in the gas plant. A large regional high school and a small hospital also complement the local economy.

Sample Size

The size of the sample taken was based on the needs of exploration of the field of possible public perception and attitudes toward wilderness. It is not sufficient for a precise estimation of the proportion of the general public in each perception or attitude category. For a sample of 130 taken from a large population, an attribute found in 50 percent of the sample indicates only that the same attribute would be found in from 37 to 66 percent of the large population, at the 98 percent level of confidence (Burstein, 1971).

CHAPTER 4

RESULTS OF INTERVIEWS

Classification of Responses

The questions asked in the interviews were almost all free response. In order to statistically analyze the responses of 129 subjects, these responses were classified by collecting all responses of similar meaning into a class. An attempt was made to limit the number of classes of responses to each question. In most cases, this collection was the sole basis of classification, although for the few cases where responses had a logical spectrum of meaning, they were arranged accordingly.

Sample Characteristics

According to the 1961 Census of Canada, 64 percent of Alberta's population lived in urban areas of over 1000 population. Forty-six percent of the population of Alberta lived in cities of over 100,000, and 12 percent in towns of 1000 to 10,000. In the sample in this study, neither the rural population nor middle-sized cities are represented, while large cities are represented about proportionately, and small towns are considerably over-represented (Table 1).

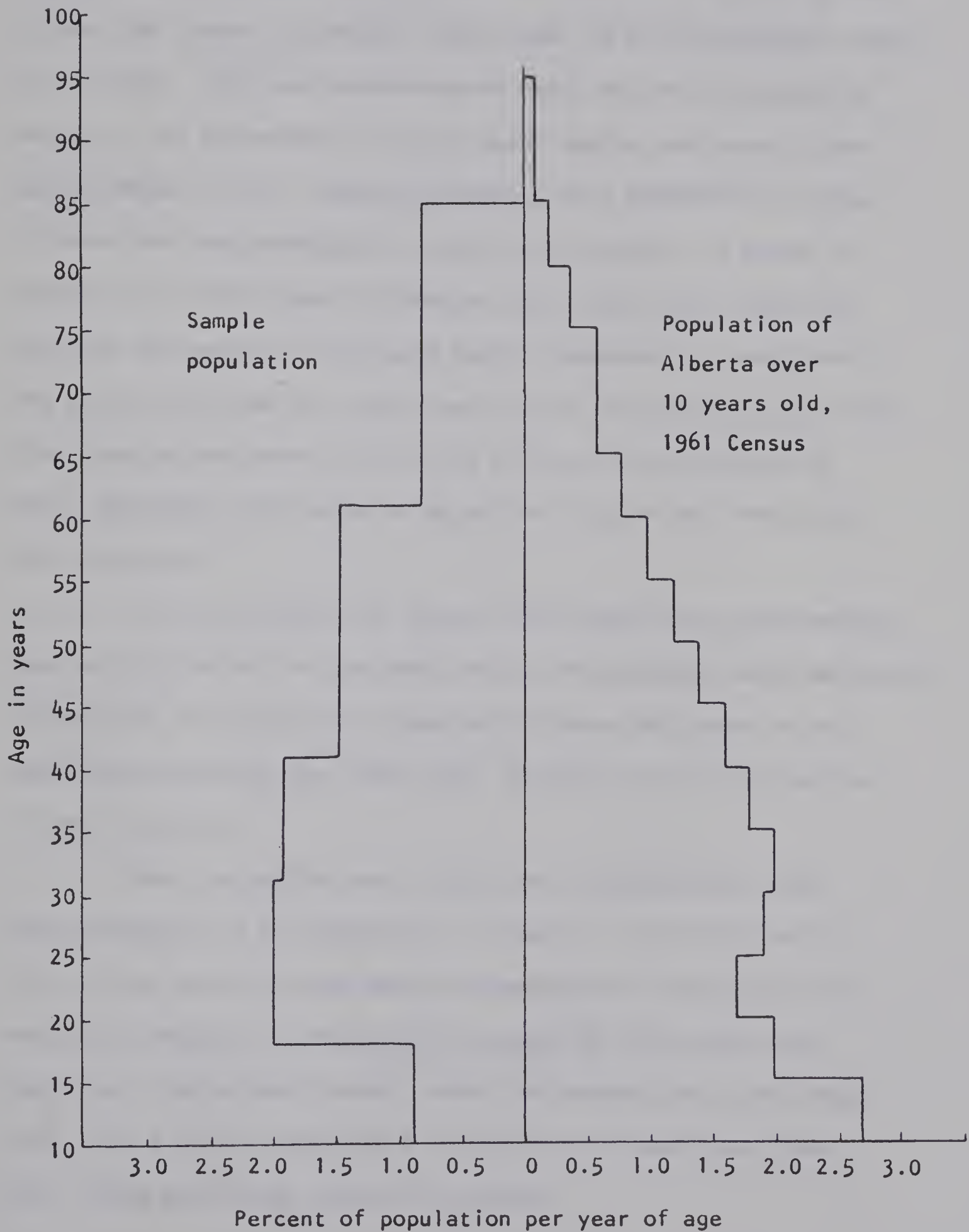
About 20 percent of addresses contacted in Edmonton resulted in interviews, while the response rate in the small towns was over 80 percent.

Table 1

Number of interviews in each location

Location	Number	Percent of Total Sample
Edmonton - Census Tract 15	7	5
Census Tract 22	11	8
Census Tract 24	11	8
Census Tract 33	10	8
Census Tract 42	8	6
Census Tract 40	18	14
Edmonton Total	65	50
High Level	23	18
Castor	21	16
Rimbey	20	16
Total Sample	129	100

Figure 3 Age distribution of sample and population of Alberta



Ages over 45 years were somewhat over-represented in the sample, compared to the population of Alberta over 10 years of age in the 1961 Census (Figure 3). Ages under 18 are considerably under-represented. This age representation resulted from the method of contact. The respondent at a particular address was usually the senior member of the household present, or a householder to whom a letter had been addressed in the initial contact. A number of couples were interviewed in Edmonton, but in only one case were children and parents of the same family respondents. Occasionally the person contacted and interviewed was in the age group under 18. Older people were more likely to be at home to be contacted at their addresses, and tended to be more willing to be interviewed when contacted.

The distribution of sexes in the sample was approximately even with 53 percent of the sample male. Householders were contacted if possible, but the personal approach to many addresses in the afternoon of working days meant that the wife was the only subject of the interview.

Married people were slightly over-represented in the sample compared to the population of Alberta in 1961 (Figure 4). This was due partly to the under-representation of ages under 18, and partly because the addresses contacted for interviews were nearly all single family homes, where few householders were unmarried. All 8 of the respondents in the 10 to 17 years age group were single and living with their parents.

Figure 4 Marital status

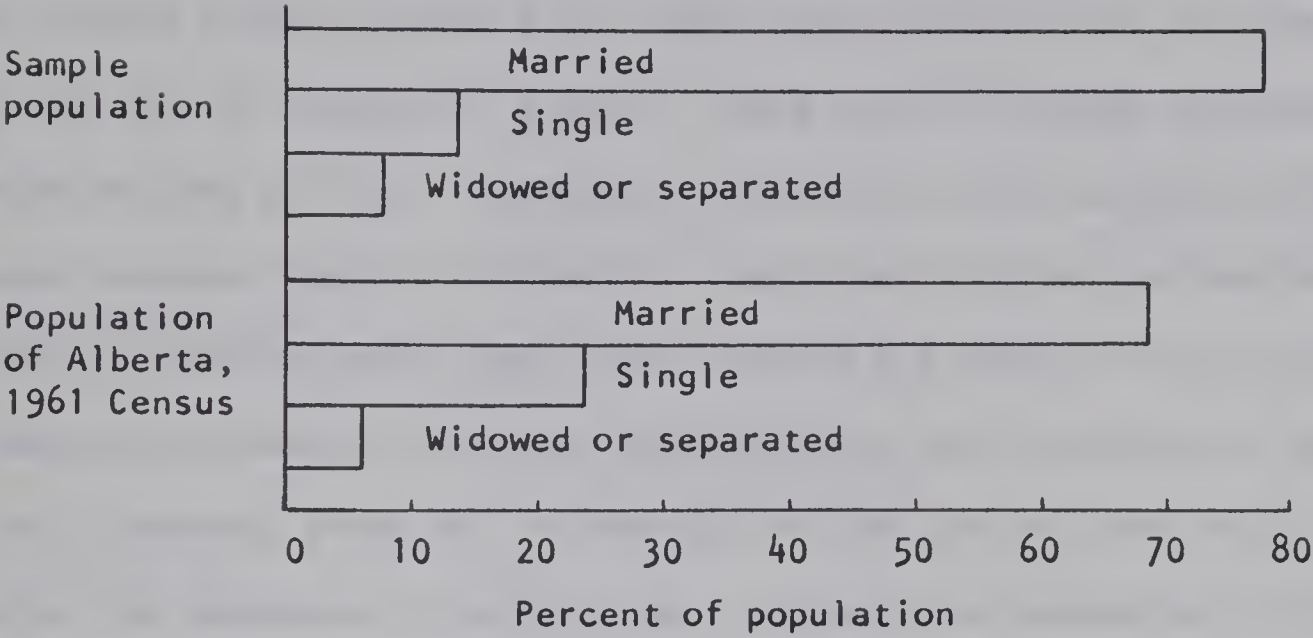
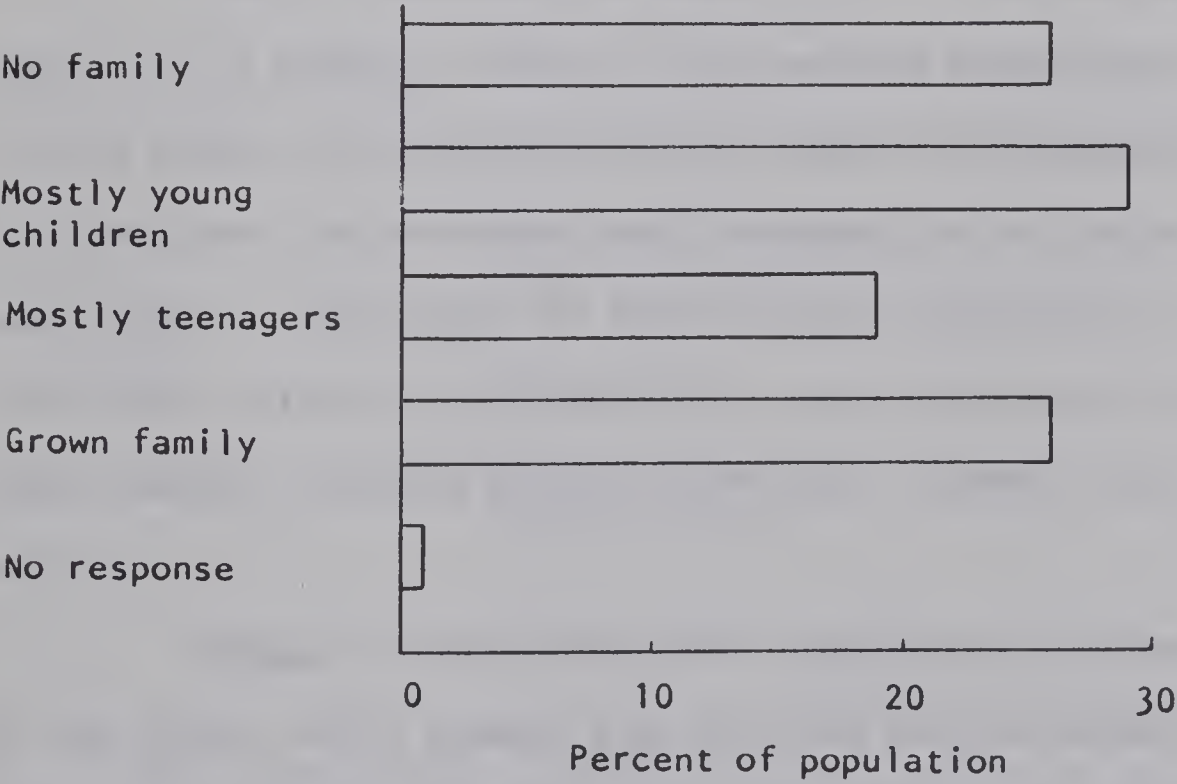


Figure 5 Type of family of sample

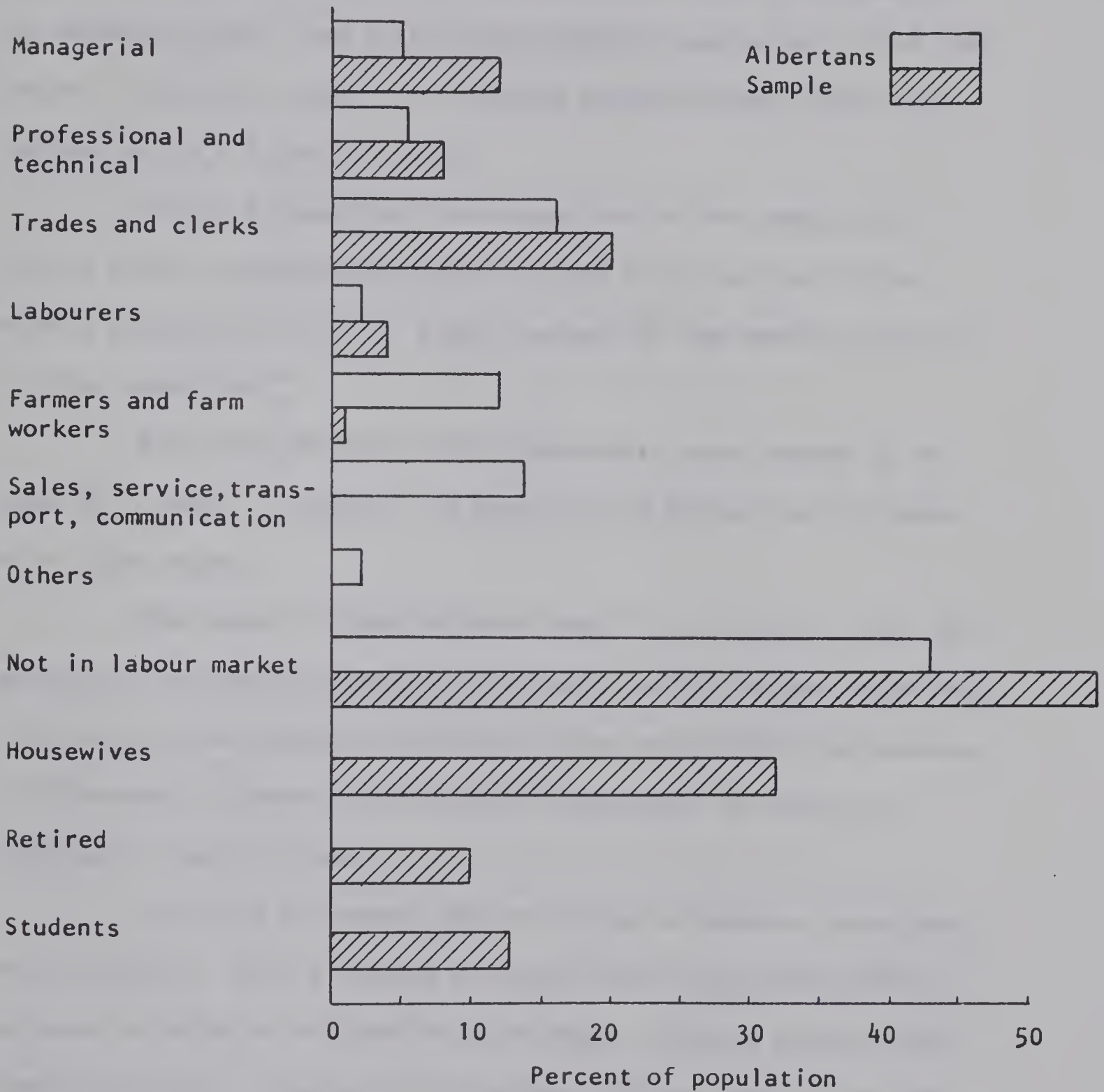


Forty-eight percent of the respondents were in the process of raising a family (Figure 5), which may be significant in terms of the type of recreation sought. Those with very young children could be less willing to embark on wilderness travel on foot or by canoe because they had no place to leave the children, and did not want to take them away from urban comforts and medical facilities. People with teenagers might be encouraged by their children to go into wilderness areas for recreation, so that the children could enjoy the adventure of such places. Although the second and third classes in Figure 5 are in terms of 'mostly' young children, and 'mostly' teenagers, nearly all cases fell clearly in one category or the other.

Figure 6 compares the proportions of the sample and the population of Alberta in 1961, in the various occupational classes. For the sample, the trades and clerks class was composed of one policeman, and the remainder were tradesmen, while clerks made up nearly half of that class for the provincial population. The provincial statistics considered only those considered to be in the labour market, and thus exclude housewives, students, and the retired.

Managerial and professional occupations are over-represented, in the sample, while farmers and sales and service workers are under-represented, compared to the population of Alberta in 1961. Only 45 percent of the sample are in the labour market compared to 57 percent of the population over 15 in the 1961 Census. This is another

Figure 6 Occupations of sample and population of Alberta over 15 years in the 1961 Census



Note: Housewives, students and the retired in the sample population were considered not in the labour market.

effect of contacting those who happened to be at home and thus available for an interview.

Figure 7 shows that the educational level of the sample was somewhat higher than that of the Canadian population in the 1961 Census. University (one or more years) educated people were over-represented by a factor of three.

Figure 8 shows that the proportion of the sample with various ethnic backgrounds closely matches that recorded in the Alberta population of 1961. Eleven percent of the sample were born in other countries.

Sixty-one percent of the respondents were brought up on farms or in small villages. The remaining 39 percent were brought up in urban areas.

When asked if they had ever been in a wilderness area, 64 percent of the sample responded positively, and 34 percent negatively. This question was answered according to the respondent's own concept of wilderness, a concept which varied from person to person, as discussed in detail below.

In Figure 9, reasons for not having wilderness experience are classified. Only 4 percent of those with no such experience expressed a definite dislike for wilderness. Seventy percent considered that their interest in wilderness did not justify the time and effort to get there. Eight respondents said they had not been in wilderness areas, but described experiences in areas most other respondents would have fitted into their wilderness concepts. It

Figure 7 Education of sample and Canadian population, 1961 Census

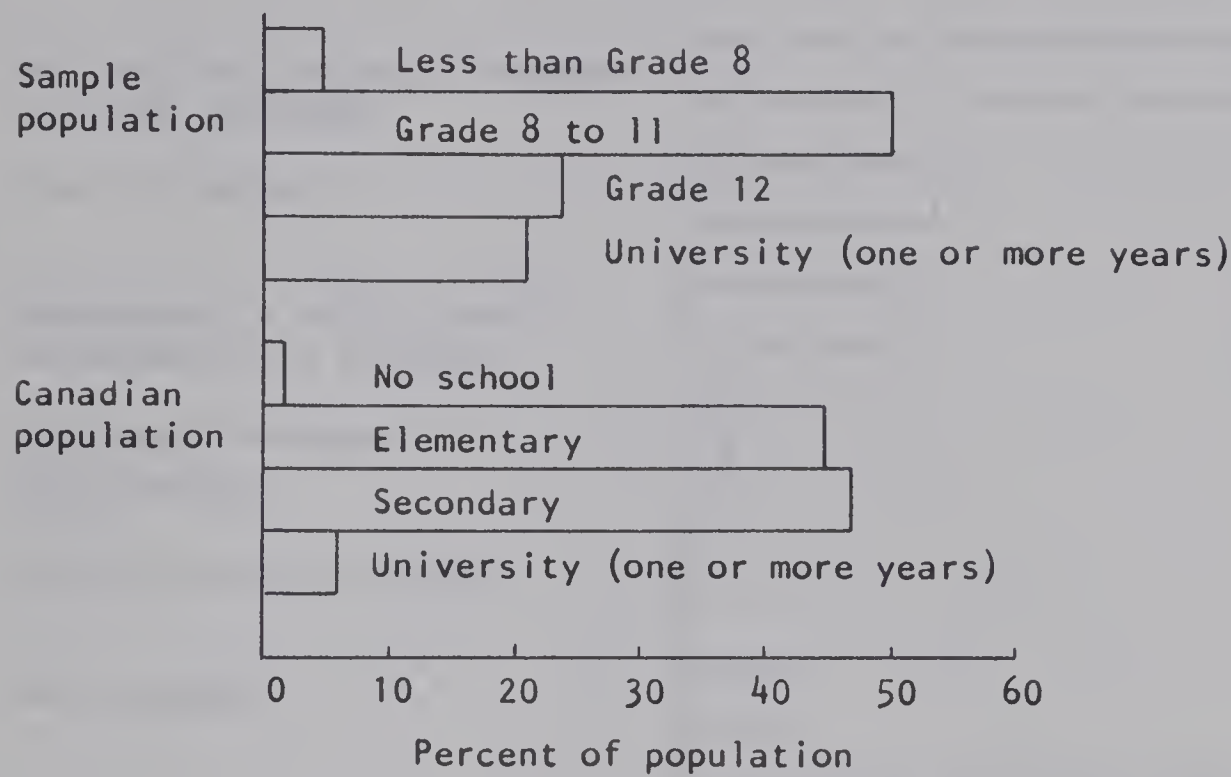


Figure 8 Ethnic origin of sample and Alberta population, 1961 Census

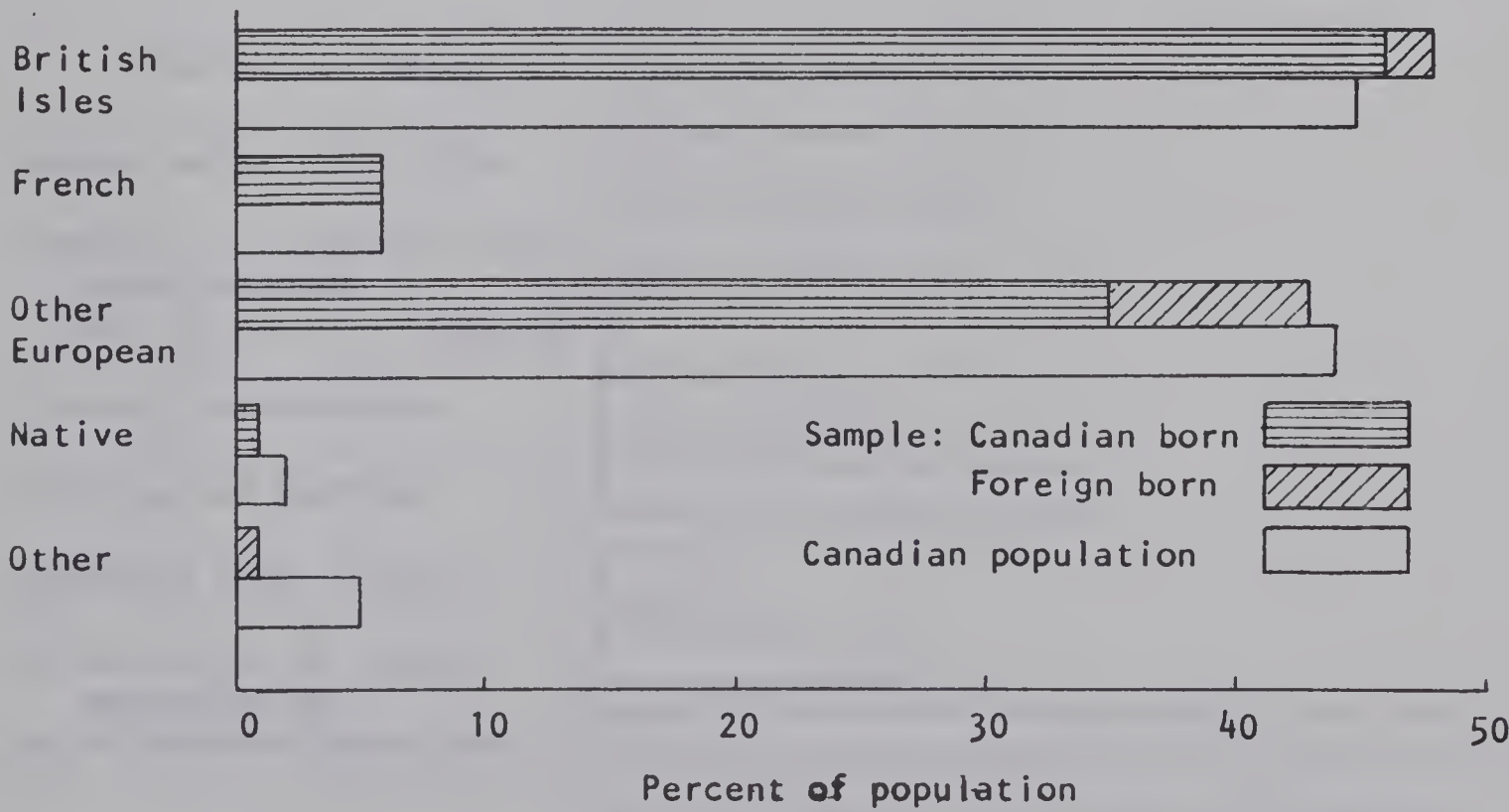


Figure 9 Reasons for not having wilderness experience

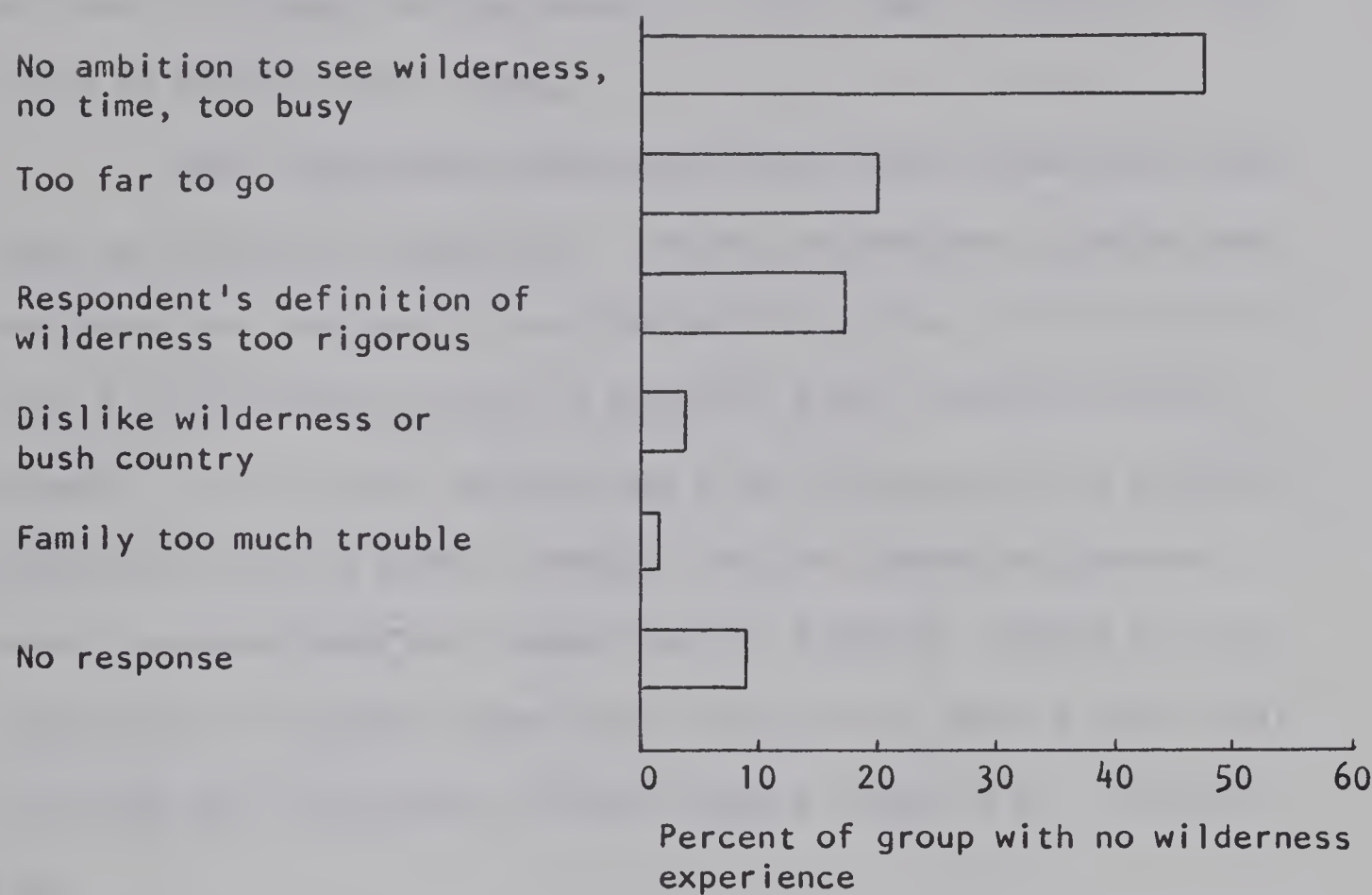
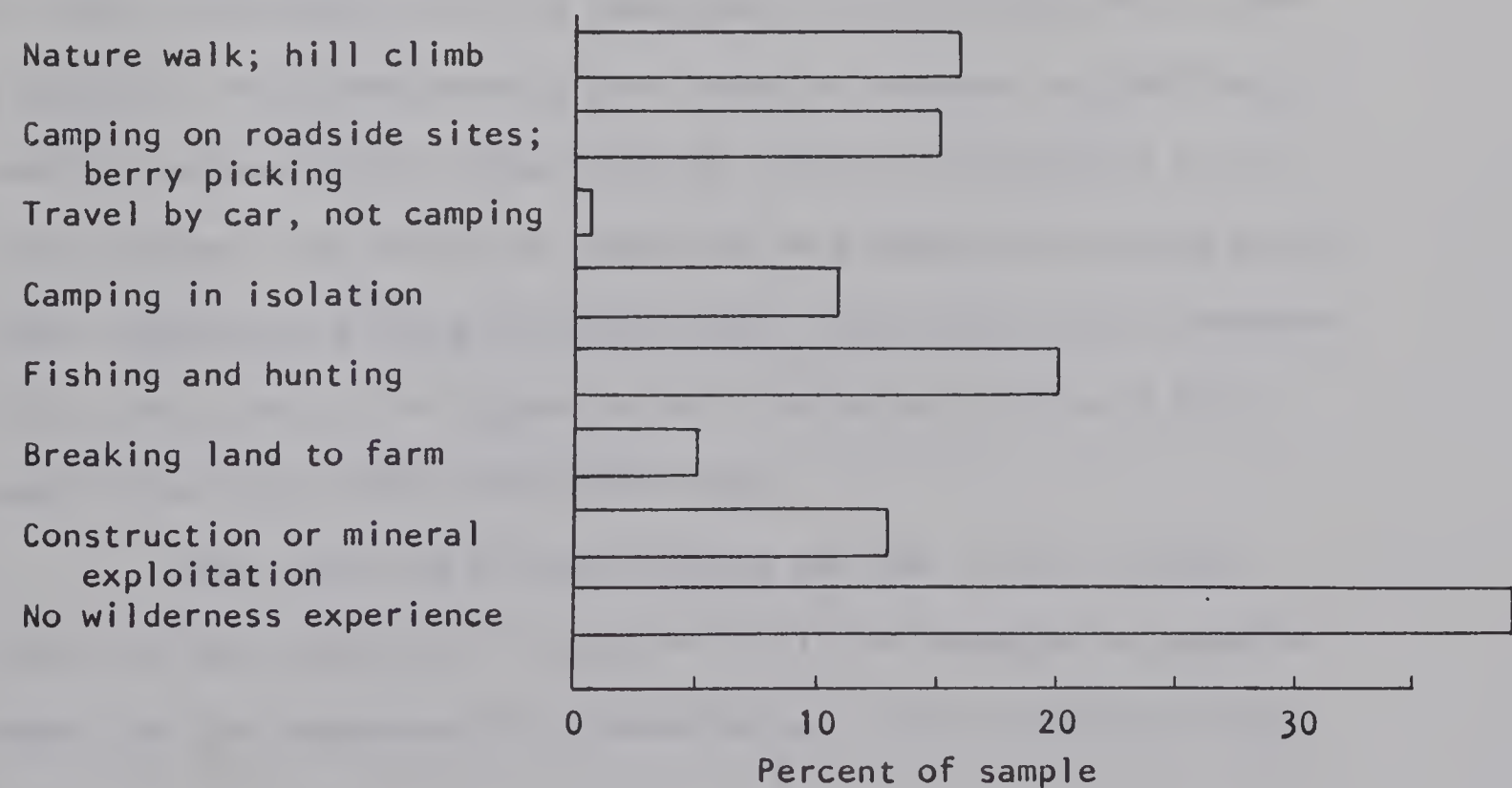


Figure 10 Nature of wilderness experiences



seems that most people who have not been in what they consider wilderness have no strong feelings about it; they simply consider it has little to do with their lives.

What respondents considered to be their wilderness experience varied widely (Figure 10). At one extreme was a person who considered she had been in a wilderness area when she drove her car along a paved highway through a mountain area in western British Columbia. At the other extreme was a man who had, with a partner, walked 100 miles in winter through trackless aspen and spruce forest southwestward from Grande Prairie, Alberta. Almost all the respondents' wilderness experiences involved at least a short walk off roads, but only about half had slept a night in an off-road area.

Well over half the respondents were averse to, or reserved about, going into a wilderness area alone (Table 2). Although some of these considered it only a reasonable safety precaution to take a partner, there does seem to be a relation between the feeling of wanting company at all times, and the aversion to being in a wilderness alone. Two thirds of those who said they did not mind being alone anytime were among those who would like to go into wilderness alone, while only 3 of 13 who do not like being alone said they would like to go alone into wilderness.

The high rate of non-response was due to the informal nature of the interview. It was difficult to interject a question about how the respondent felt about being in the wilderness alone,

Table 2

Respondents' feelings about going into wilderness
alone versus feelings about being alone anywhere

Feelings about going into wilderness alone		Feelings about being alone anywhere				
		Like it or do not mind	Do not like it	No response	Row total	Percent of total sample
Like it	Number	18	3	26	47	36
	Row pct	38	6	55		
	Col pct	67	21	30		
Neutral, or like it with reservations	Number	3	4	18	25	19
	Row pct	12	16	72		
	Col pct	11	29	30		
Do not like it	Number	6	6	13	25	19
	Row pct	24	24	52		
	Col pct	22	43	15		
No response	Number	0	1	31	32	25
	Row pct	0	3	97		
	Col pct	0	7	35		
Total	Number	27	14	88	129	100
	Percent	21	11	68	100	

Note: Row pct. is the percentage of the row total represented by the number at the top of each three-number group.

Col pct. is the percentage of the column total represented by the number at the top of each three-number group.

after he had said he had not yet been in any wilderness area, and would not readily go into such a place.

Respondents were asked if they were concerned about environmental problems they hear about in the news of the day, with air and water pollution and the recent Arctic pipeline controversy as examples (Figure 11). Ninety percent responded positively, but 29 percent of these qualified their answer with the note that there are no pressing environmental problems facing them personally. Most people apparently consider environmental problems important to society as a whole, but a considerable minority wanted to make it clear that no such problems concern them in their homes.

A definite majority (72 percent) of the respondents preferred to spend their vacations in recreational travel, at a lakeside or on a camping or hiking expedition (Figure 12). A few travellers take a winter vacation trip to the tropics as a break from the winter in Canada. Twenty percent of the sample stay home or travel only to familiar places to visit relatives. These vacations were classified separately since they did not involve the public recreation resources of wildland, lakeside and the roads to those places. Most people use such resources for their vacations, and in this day of the automobile, the highways are one of the most used recreational assets of the country.

Most of the respondents (84 percent) had spent part of their lives outdoors in recreation or work (Figure 13). Only half of these had taken part in recreation in or near wilderness. A few

Figure 11 Respondents expressed concern for environmental problems in general

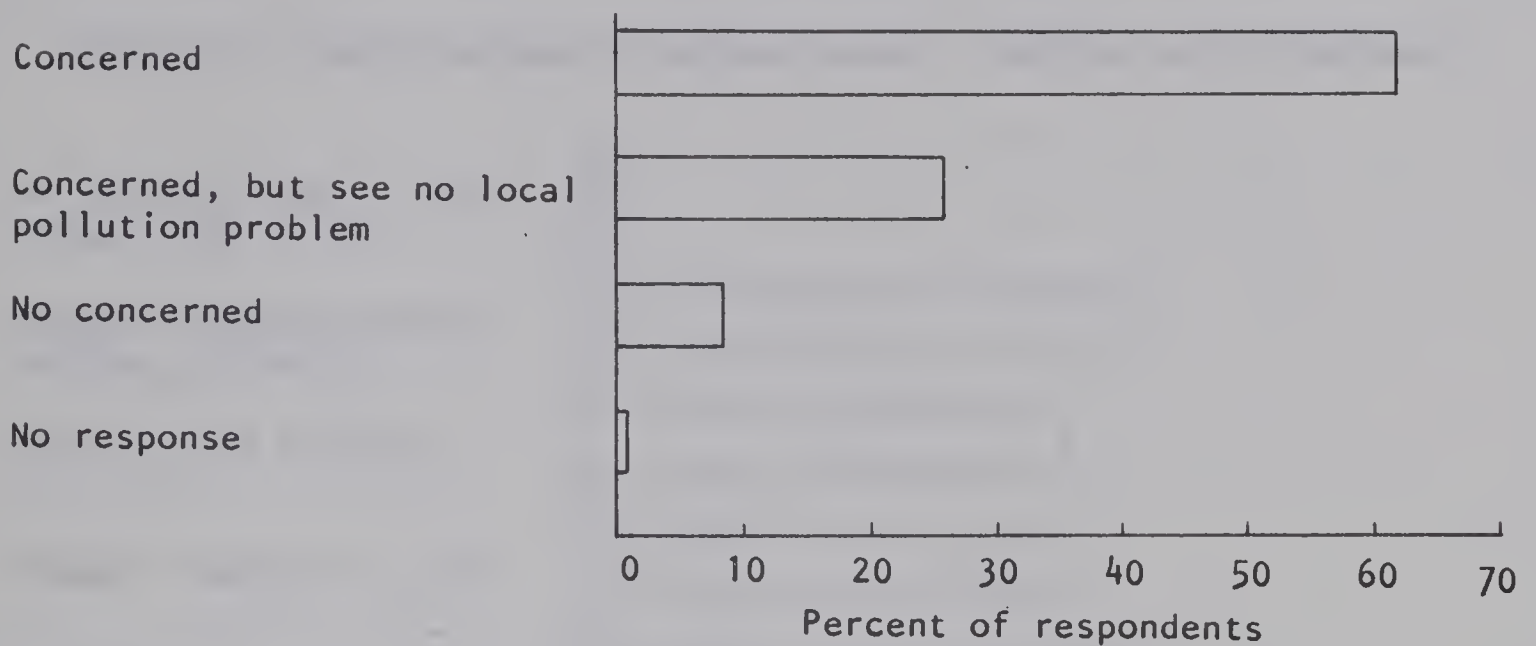


Figure 12 Types of vacation preferred by respondents

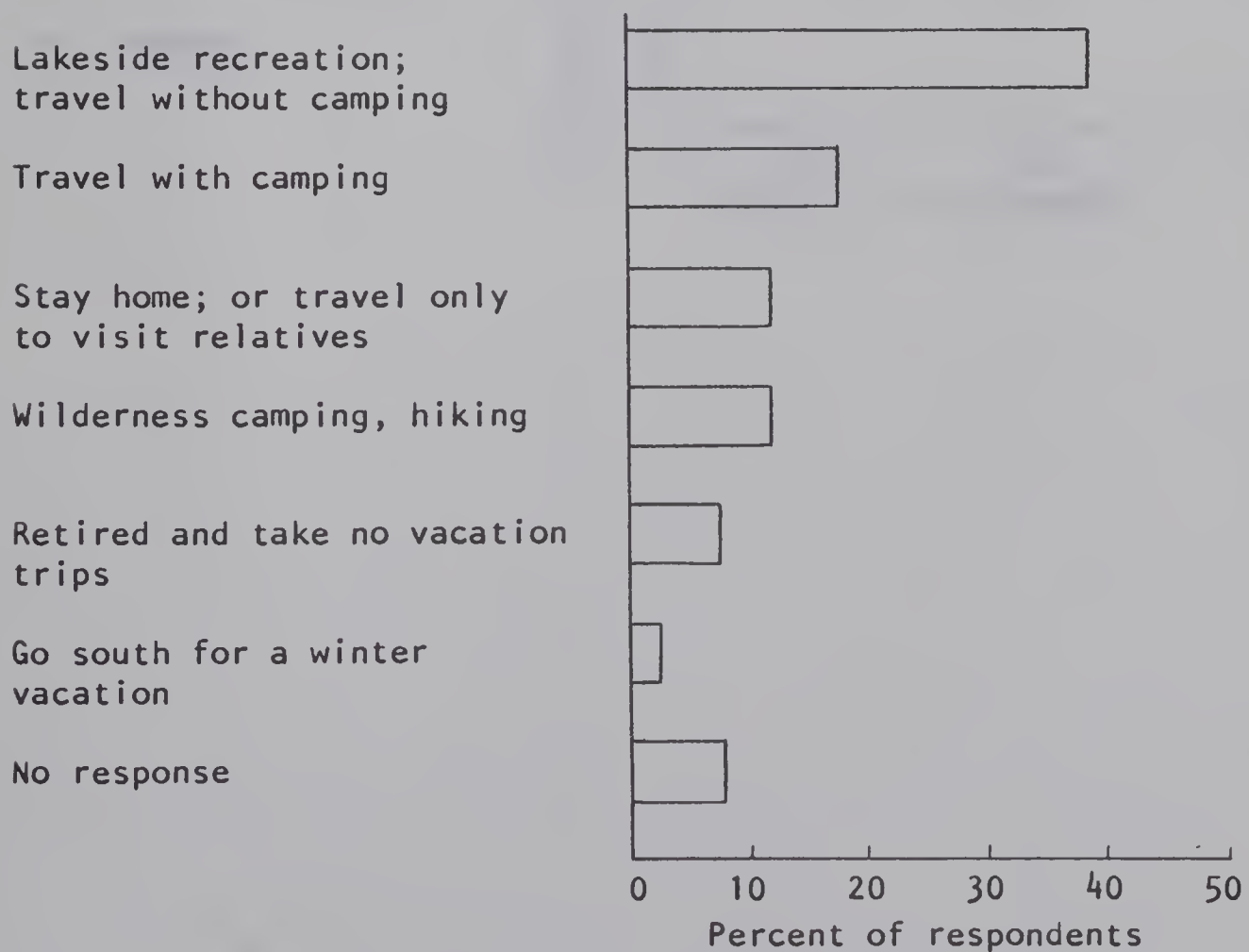
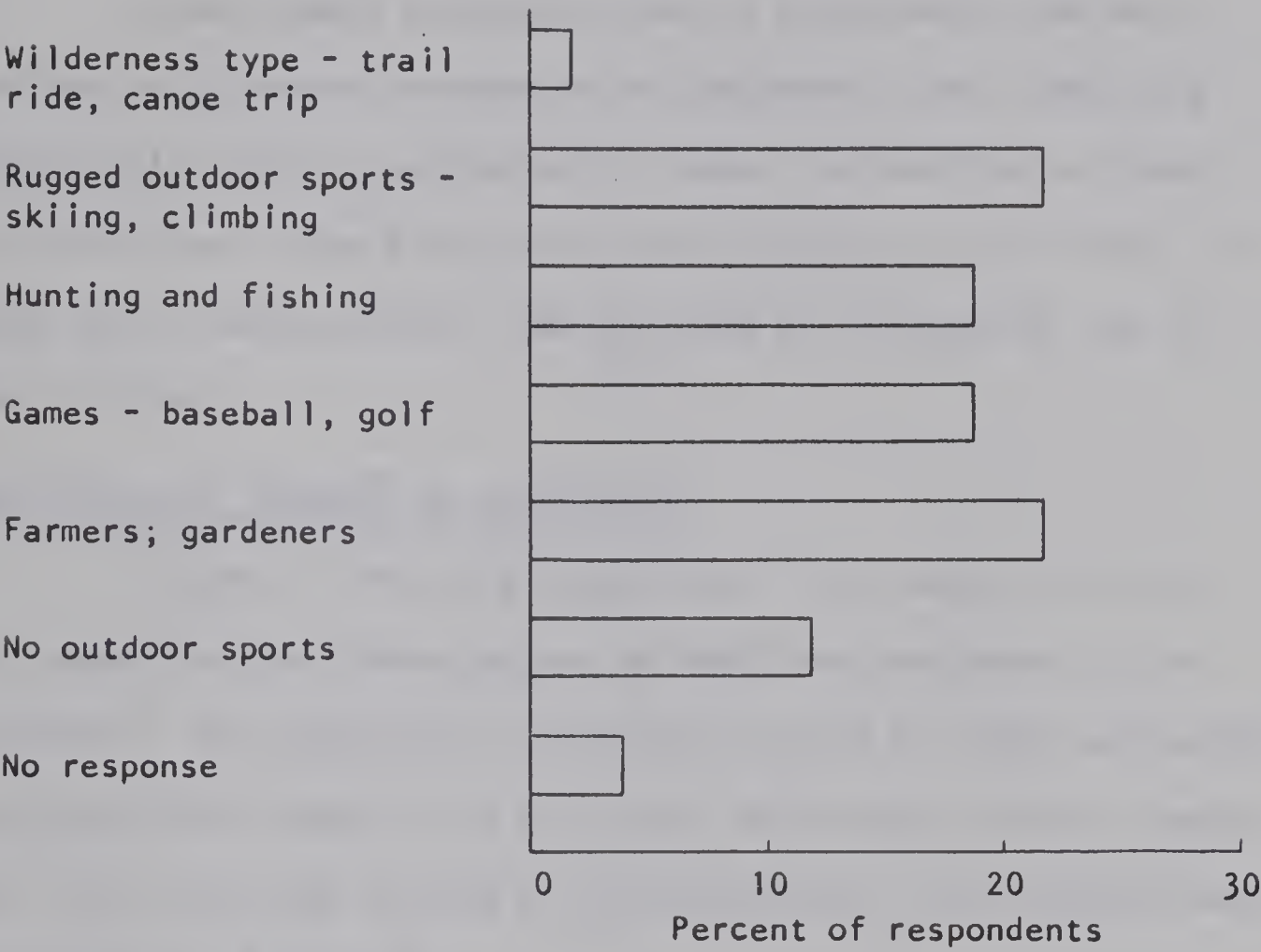


Figure 13 Participation in outdoor sports, hobbies and lifestyles



of the skiers may not have been in rugged country for their sport, since skiing is now frequently enjoyed on smaller slopes such as the valley walls inside the city of Edmonton.

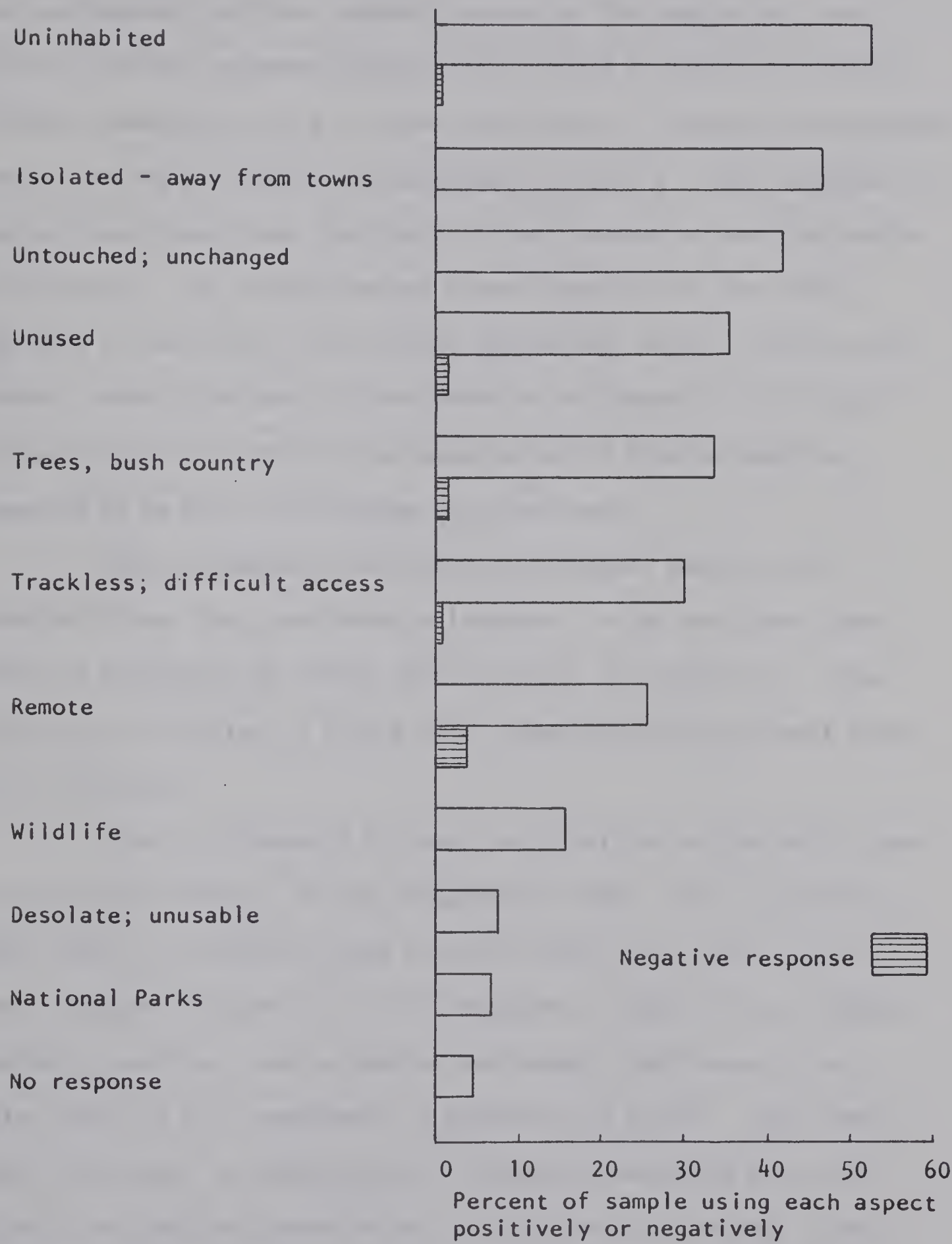
A very small proportion, only 3 respondents, had been involved in wilderness recreation of the purest type, travelling through wild areas by pack horse or canoe. In addition to these, 5 of the former farmers had gone into primitive, or wild areas, to break land to agriculture. They went not for recreation, but to make a living.

Definitions or concepts of wilderness

Figure 14 shows the proportion of the sample who used each aspect in their descriptions of what they considered to be wilderness. No attempt has been made to single out what each person considered most important in his or her definition, but less important items have been omitted by the respondents, thus showing lower frequencies in Figure 14.

The four most frequently used aspects of definition show that people consider wilderness to be land that men are not occupying or using. In Alberta, wilderness is frequently associated with forests, or bush country, and with wildlife. Only a few associate wilderness with desolate land where no trees grow, such as Arctic tundra, or very short grassed prairie. This common image of wilderness as green land with animal life may make it desirable for recreation, especially hunting and fishing. It may also make the natural resources in wilderness a temptation to potential exploitation.

Figure 14 Aspects of respondents' definitions of wilderness



The province of Alberta can be divided into two main parts. The southeastern portion, containing most of the population, has a grid of main and secondary roads, and its land is almost all either grazed by domestic cattle or under cultivation. This part corresponds roughly to the grasslands and parkland on Figure 2. The remainder of the province constitutes the foothills and mountains, and the northern forests. The latter area has a small population, few roads, and most of the land in its natural vegetation, usually covered with forest. When wilderness is considered to be places of little population, and no cultivation, the association in Alberta might be expected to be with the forested north and west.

Many respondents used mountain national parks as an example of what they considered wilderness. A few mentioned these parks in attempting to define their concepts of wilderness. These latter are classified in Figure 14 as identifying the national parks with wilderness.

Table 3 (Appendix B) shows the relations of the definitions used and the locations of the respondents' homes. The two commonly used terms of uninhabited, and isolation from towns, were used in about the same frequencies in all locations. High Level and Rimbey residents used the terms untouched and unused significantly less often than did the respondents in Edmonton and Castor. The former towns are closer to country that is commonly identified with wilderness, and they are aware of use of this land for hunting, timbering and mineral exploration. They may consider that such uses do

not prevent such land from being considered wilderness. Residents of Edmonton and Castor may think that no use is being made of land they consider to be wilderness, but which they do not see at first hand.

The remoteness or closeness of wilderness was mentioned much more frequently in High Level and Castor than in Edmonton and Rimbey. High Level's population are all people who have recently moved to that very new town. They have come mainly from more developed areas further south. Because of their recent move, and the popular concept of their present surrounding forest as wild land, these people probably are more aware of their geographical location with respect to wilderness than those who live in more settled locations. Castor is surrounded by nearly treeless agricultural land. People there recognize it as such and tend to think of uninhabited, unused wilderness land as being other, far away places. They frequently mentioned both the forest to the north and the mountain areas to the west as examples of wilderness.

The small samples preclude significant differentiation between towns on other factors in the definition of wilderness.

University educated respondents averaged nearly 4 aspects in their individual wilderness definitions, compared to 2 for the lowest educational group and 3 for each of the middle groups. Table 4 (Appendix B) is a table of frequencies corrected to show relative use of each aspect of wilderness definition independent of the average complexity of definition for that group of respondents.

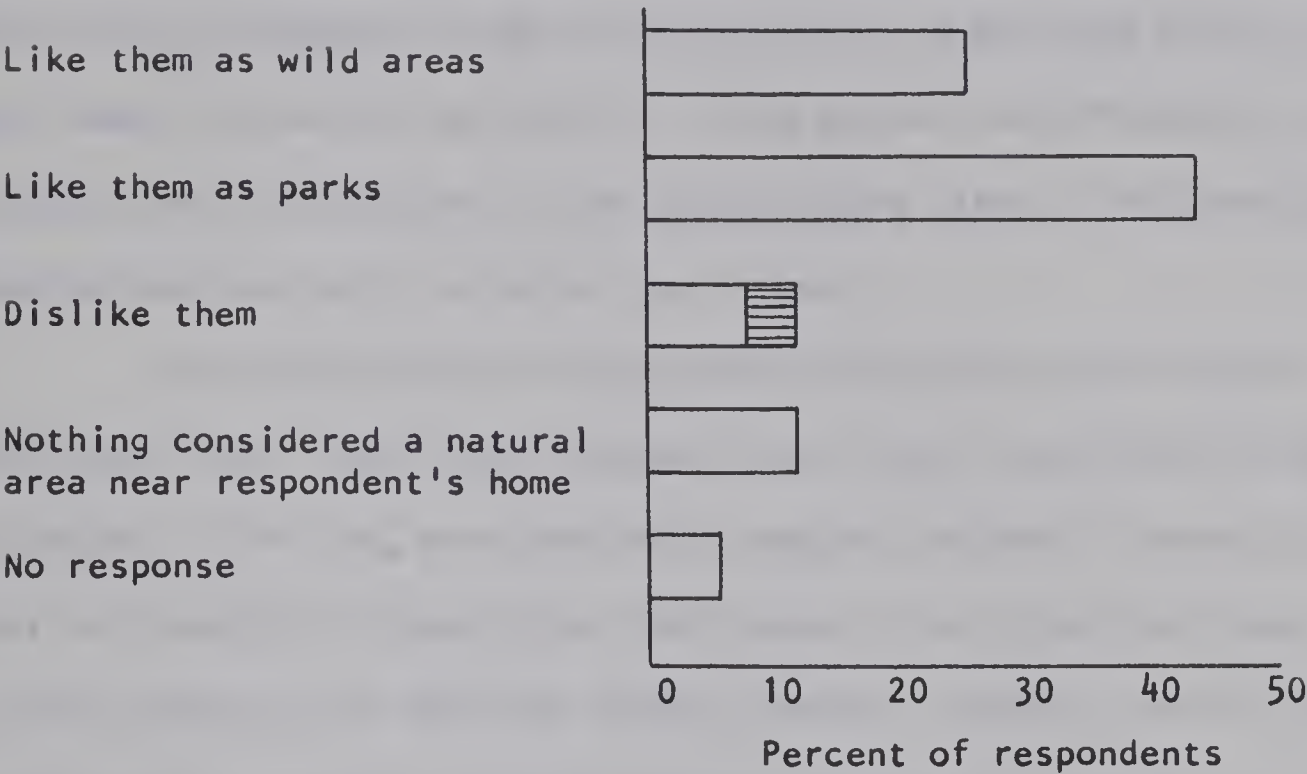
Of the 5 people with less than Grade 8 education who attempted to define wilderness, 4 identified bush country or forests with it. With increasing level of education, this identification became less frequent.

There was an increasing incidence of identification of national parks with wilderness, as education of the respondents increased. Since better educated respondents otherwise tend to define wilderness in terms of abstract qualities, this identification with parks may be related to the economic status of the respondents. Those with more education have better paying jobs, enabling them more frequently to travel to national parks. They are thus more familiar with national parks than people who seldom travel to such areas. Education seems otherwise to have little effect on the way wilderness is defined.

Attitudes toward natural areas near respondents' homes

In Section 5 of the questionnaire were three questions concerning natural areas near the subject's home, the last of which asked if he considered such areas made his home town a better place to live in. On the basis of the reply to that question and the discussion engendered by the first question in the section, the response was classified as "like" or "dislike" (Figure 15). The second question asked if the subject considered such areas were related to his or her concept of wilderness. If the first classification was "like", but not as wilderness, the response was classified under "Like them as parks." Five of those who disliked such areas

Figure 15 Attitude toward natural areas nearby



Dislike and consider as wild areas 

considered them related to the concept of wilderness.

After a number of respondents in Castor had said they saw no natural or wild areas nearby, the opening of this section of the interview was changed to "Do you consider any areas near here, however small, as natural or wild?" If the answer was affirmative, the original set of questions in the section were asked. This modified opening was used only in Castor and Rimbey.

Only 30 percent of respondents considered that natural areas near their homes were related to what they considered to be wilderness. This may mean that most people consider wilderness areas must be a certain minimum size, and removed from inhabited areas. It may indicate that familiar places, however natural, are not considered wild. Further investigation is required to determine which implications are appropriate.

Eighty-six percent of those who recognized natural areas nearby considered such places beneficial to their towns. This may indicate a general love of natural things, which could be partly due to the recent trend in literature toward strongly appreciating beauty in nature. The Canadian educational system teaches this appreciation along with the economic appreciation of the exploitation of natural resources, the latter of which may disturb otherwise natural areas.

The attitude towards nearby natural areas was closely related to the local situation. Only in Edmonton and High Level were such areas considered not beneficial by any respondents. In

Edmonton the complaint was that natural, unused land becomes an unsightly garbage dump. A few noted that it is un-policed and unlighted and thus a dangerous playground for children and a nocturnal haven for muggers. Many people in High Level went to that town quite recently to find employment and are not used to the country there. Some continue to dislike it after many months of residence.

In Edmonton Census Tract 15 (Figure 1), with very low income residents, and with no local parks, half of those responding considered natural areas in the city are not beneficial. In Census Tract 24, nine of eleven respondents liked having natural areas nearby, but did not consider them related to wilderness. Adjacent to this area is a large ravine, partly developed as a park. On another side is a well-developed park in the river valley. It is one of the oldest sections of Edmonton and some of its residents remarked that they liked the large mature trees along its streets.

The only part of Edmonton where most respondents liked natural areas nearby and considered them wild, was Census Tract 42. This area is on the edge of the city, overlooking a little developed part of the river valley and an undeveloped ravine. Beyond the ravine are a number of oil refineries and farmland.

Castor, where half the respondents considered there are no natural areas nearby, is surrounded by nearly treeless farmland. There are, however, many small patches of trees, especially along the flood-plain of the Blindman River, which flows by about a mile west of the town. Subalpine forest begins only 15 miles to the west,

and many of the respondents who considered there are natural areas nearby referred to places on the fringe of that forested area.

Table 5 (Appendix B) shows that people brought up in rural or urban areas express the same sorts of attitudes toward natural areas near their homes. A tabulation between these attitudes and the way respondents define wilderness also showed very little correlation. These results again indicate that local conditions alone are the main explanation of differences in attitudes toward nearby natural areas.

Wilderness value - yes or no

Eighty-six percent of the sample responded affirmatively and eleven percent in the negative when asked if wilderness areas have any value as they are. The sort of values it is considered to have varied widely, as discussed below.

The locations where respondents most frequently said wilderness has no value were Edmonton Census Tract 15, High Level, and Castor. In Edmonton Census Tract 15, the residents of which are among the poorest in the city, three out of seven respondents said wilderness has no value as it is. These people considered that natural resources should be utilized for the benefit of the economy as a whole. One respondent considered that if wilderness is restricted, it would become a playground only for the rich, and not for his kind of people.

In High Level, five of 23 respondents gave wilderness no value as it is. These are the people, as mentioned above, who

moved into an area of near-wilderness to find employment, and not because they liked the country.

In Castor, 14 percent of respondents gave wilderness no value, compared to only 8 percent in Edmonton and 5 percent (one out of 20 respondents) in Rimbey. Castor's economy is closely tied to agriculture and its people are all associated with it. They may have a tendency to see value in land only when it is broken to the plow or grazed by cattle.

Four of the seven respondents with less than Grade 8 education, said wilderness has no value. For the Grades 8 to 12 group, the proportion of negative responses dropped to 10 percent, and for those with some university education, the proportion was only one out of 27 respondents, or 4 percent. The pattern of replies to this question was almost identical for people raised in rural or urban areas.

A cross tabulation of responses to the two questions showed that people who say they are not concerned about environmental problems in general, are much more likely to say also that wilderness areas have no value, than are those who claim to be concerned about the environment.

In all the above cases, the samples of negative responses were small enough to cast some doubt on the statistical significance of their differences.

Values attributed to wilderness

In classifying the values given for wilderness, what was called the main value for each respondent was either the value stressed by that person, or the first value given. Over half of the sample gave two or more values to wilderness, and the frequencies of second values are also shown on Figure 16.

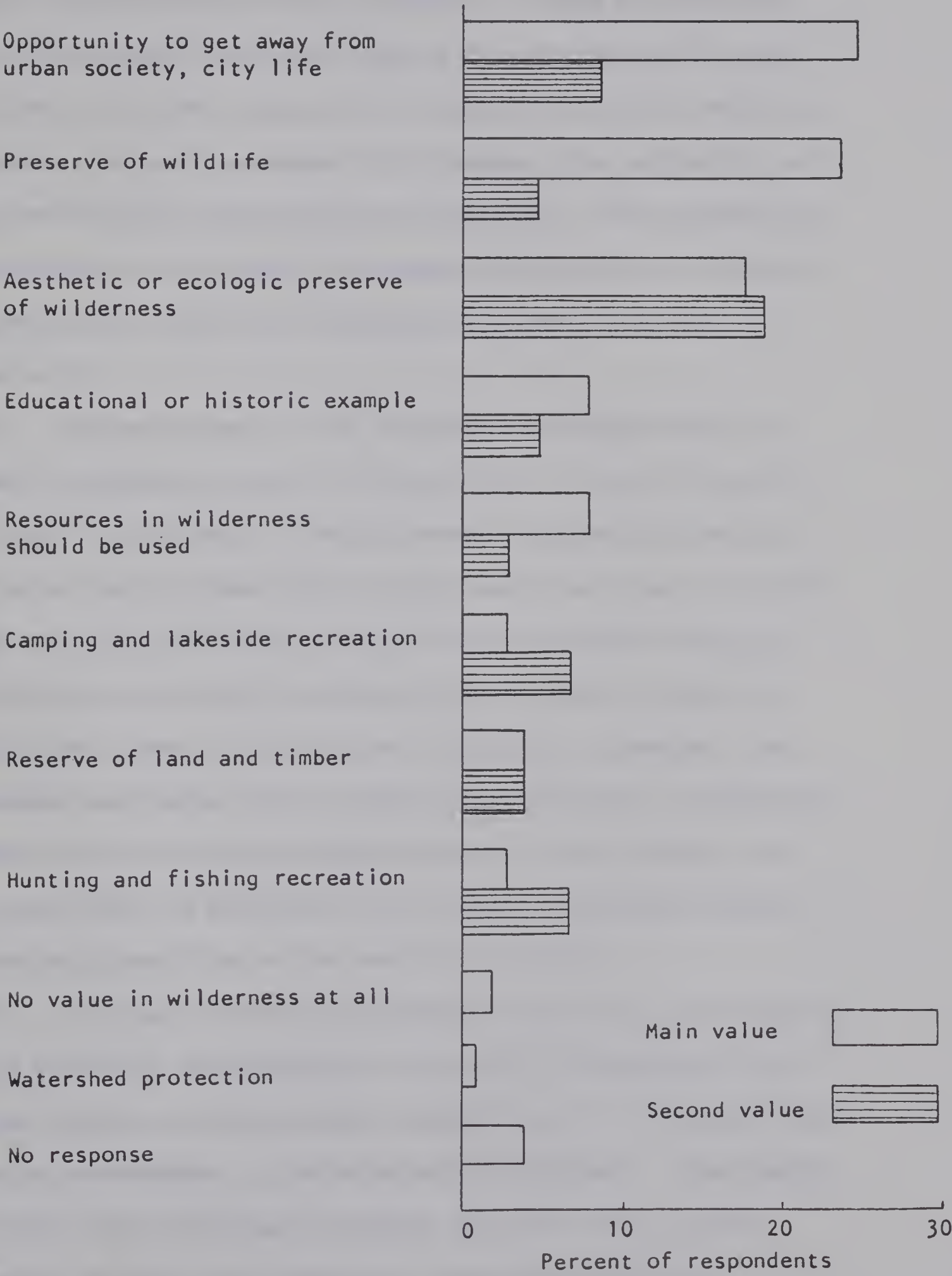
The first class in Figure 16, refers to the opportunity wilderness affords to make a complete change from urban life, at least for a brief vacation time. Two respondents expressed a preference for wilderness over urban areas as a place to live.

Many respondents considered that the preservation of species of wildlife, especially game animals, is a main reason for keeping wilderness. They seemed to consider that these animals need wildland as a habitat, and can not be raised in captivity. There seems also to be a certain aesthetic appeal to animals which live in the wild, free of man's interference in their daily lives.

Those who considered there is an aesthetic appeal to the idea of wilderness as a whole were classed separately in Figure 16. A very few respondents were included in this class who considered that wilderness areas should be preserved for the benefit of ecological systems outside these wilderness preserves.

The idea of wilderness as an example of the historic setting of Canada, or as a place to educate young people about natural environments was considered a principal or secondary value by one in eight respondents.

Figure 16 Values attributed to wilderness



Three-quarters of the sample put the main value for wilderness in one of the above four categories. These are the values for wilderness which would not require it to be changed, but only preserved, and in most cases, also visited. Most of the remaining respondents referred to values for wilderness, the realization of which would require some ecological disturbance. The extreme case included the two respondents who thought of wilderness as desolate and undesirable places, and considered that such areas have no value at all.

Eleven percent of the respondents considered that the primary or secondary value of wilderness lay in using any physical resources in such areas. A smaller number considered wilderness a reserve of land or timber which society should hold now, but should expect to use in the future. Also a use of biological resources in wilderness, but usually considered in a different light from minerals and timber, is hunting and fishing for recreation. One respondent considered that the game hunting recreation in Alberta's forests is the last great untapped resource in the province. He considered that the promotion of this type of recreation would be economically beneficial to the province as a whole.

Although it may be considered by some as an undue extension of the definition of wilderness, four of the 129 respondents considered camping at well-developed roadside sites, or recreation at lakeside developments is a main value for wilderness. These people apparently do not distinguish between developed areas with few permanent residents, and completely undeveloped wilderness.

The main value respondents gave for wilderness was tabulated against several characteristics of the sample population. It was found age and ethnic origin of the respondents do not significantly affect these values. Tabulating against type of family of the respondent, it was found that all of those who consider hunting and fishing the main value, were in the group with young families. This may be due to a new awareness of that type of recreation in people who have just become settled enough to take part in it. Those with more experience may define wilderness in terms of some other value first. No other significant correlation with type of family was found.

Four of the seven interviewed with less than Grade 8 education said that resources in wilderness should be used. This proportion decreased with increasing education. The proportion who considered that the main value is the opportunity to leave urban society increased from 14 percent for the lowest educated group, to 44 percent for those with some university education. These results agree with both the economic and the intellectual implications of level of education. Poorly educated people need jobs at lower levels of skill and resource exploitation provides that employment. Resource exploitation is also a seemingly direct way to increase the standard of living of society as a whole. Well educated people have surplus financial resources to go on expensive vacations in primitive areas, and the intellectual inclination (according to current fashion) to go there and enjoy it.

A tabulation of values given for wilderness against respondents' occupations showed an inclination to value the opportunity to leave urban society among those with managerial or professional occupations. These groups are the wealthiest, and this supports the economic part of the argument above. Professionals interviewed were all in the university educated group.

Tradesmen tend to value wilderness for other reasons. Among tradesmen interviewed were three of the four respondents who considered hunting and fishing the main value for it.

There was no significant difference between the values for wilderness given by students and those of the sample as a whole. The students were not selected solely from universities, but ranged from junior high school to a 30-year-old Ph.D. candidate.

Subjects who grew up in rural areas gave wilderness nearly the same set of values as those who had grown up in urban areas. One difference was that all five of those who considered the main value of wilderness as a reserve of land and timber for future use had grown up in rural areas. In Alberta's recent history, much land that had lain "unused" for millenia was broken to the plow, and timber stands were cut into for the first time. Rural people may think in terms of some of the land not used being kept in reserve for future utilization. This is especially likely in the case of agriculture, where marginal returns on new land broken to the plow have recently ceased to exceed returns on the better land already in production.

Educational or historic example as a value for wilderness was more frequently mentioned by urban raised respondents. This may be due to a heavier stress on education and culture in urban than in rural life, where physical production is more important.

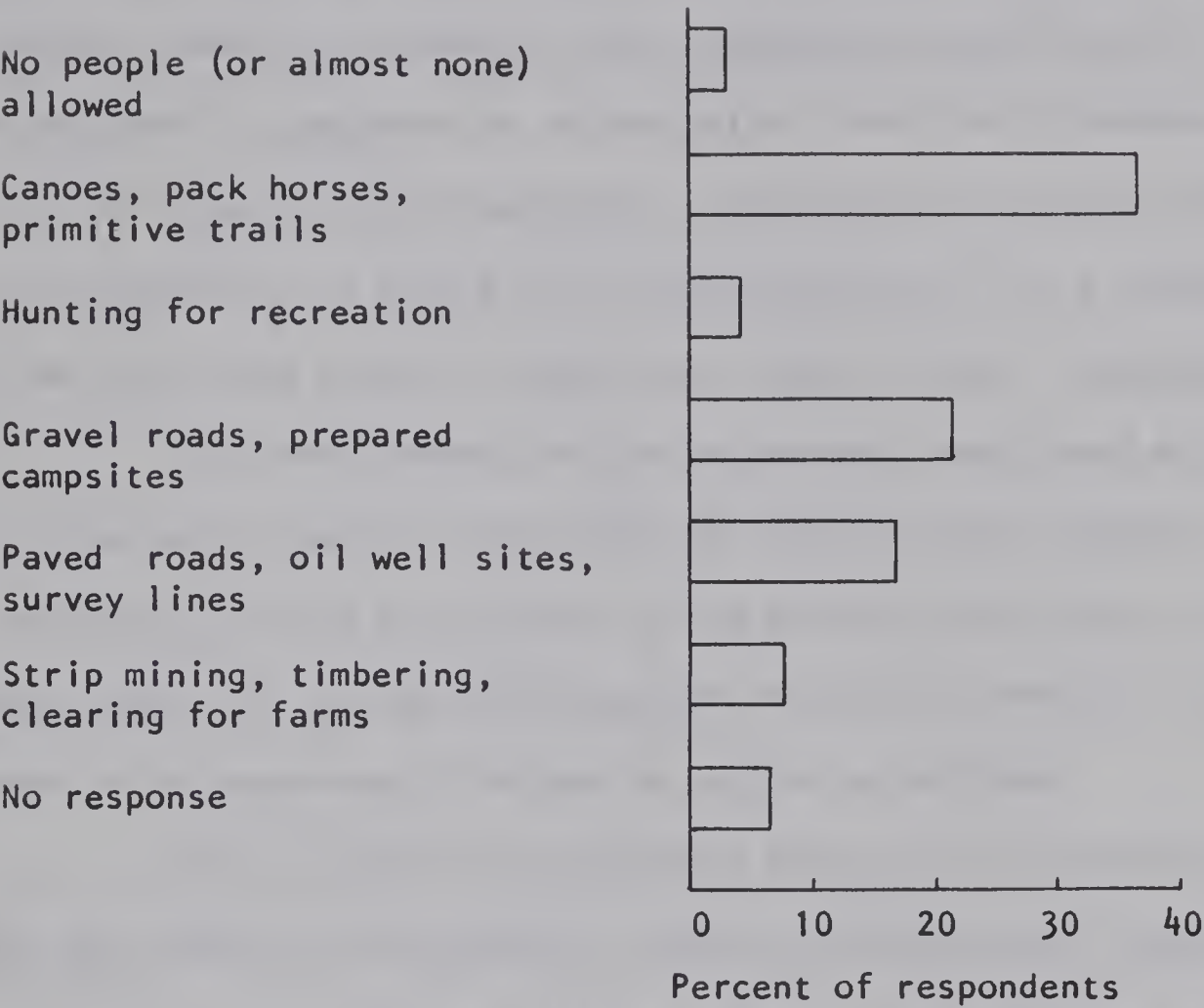
The opportunity to leave urban society was considered a main value for wilderness more frequently by those whose vacation preference was wilderness camping or hunting, and less frequently than average by respondents who tend to stay home for their vacations or travel only to familiar places. The vacation preferences of those who considered that resources in wilderness areas should be used, were either travelling without camping or staying home. It seems that those who will use natural or wild areas for recreation tend to value them for that purpose, while those who will not use wilderness for recreation tend to think it appropriate to disturb and develop it.

A tabulation of respondents' participation in outdoor sports and hobbies, and values given for wilderness showed few significant correlations. The opportunity to leave cities was considered a main value for wilderness more frequently than average by those who have hunted or fished, but by very few of those who do not take part in outdoor sports and hobbies. This indicates that experience in wilderness plays an important part in forming attitudes towards it.

Activities considered permissible in wilderness

An attempt is made in Figure 17 to classify responses to

Figure 17 Activities considered permissible in wilderness areas



the question "What sort of activities should be allowed in wilderness areas?", in a minimum number of classes, in ascending order of disturbance to natural environments. The groupings are based on apparent associations made by the respondents, as well as the investigator's judgement as to equivalent levels of disturbance to a typical Alberta forest ecosystem. Hunting for recreation seemed to be ordered as in Figure 17 by those who gave it as a response. It may have been placed at some other level by other respondents.

Forty-one percent of the respondents considered activities in wilderness should be restricted to the first two classes, which involve very little disturbance to the natural environment. This would appear to include the group who definitely consider wilderness areas to be preserves of nature or natural ecosystems.

Most of those who considered hunting for recreation only the next degree of disturbance, thought their own very restricted hunting activities had very little effect on the ecosystem as a whole. They were especially cognizant of the fact they built no roads and broke few new trails, specifically for hunting (although they readily take advantage of roads built for other purposes, to penetrate deeper into the country before leaving their vehicles to hunt on foot).

A total of 68 percent of the sample considered wilderness should be left somewhat primitive, with no more than gravel roads, and should be restricted to recreational uses. This agrees with findings from other parts of these interview results, that the majority of people think of wilderness as a recreational resource.

The remaining 25 percent responding to the question would allow exploitation of resources, and modern highways in wilderness areas. Those who consider that no wilderness area should be preserved from any exploitation of resources of economic value, were included in this group.

The activities respondents considered permissible in wilderness were cross-tabulated against various sample characteristics and responses to other sections of the questionnaire. A comparison of the growth of cumulative percentage in favour of various levels of disturbance was made in each case. Neither type of family of the respondent nor upbringing in a rural or urban area appeared to have any significant effect on response to this question.

The age group 31 to 60 years tended to favour keeping wilderness areas primitive, compared to the response of younger and older age groups. The few respondents with less than Grade 8 education strongly favoured development of resources in wilderness. University educated respondents strongly favoured limiting activities in wilderness to the least disruptive categories.

Managerial, professional and student occupation groups tended to favour preservation of wilderness areas from disturbance, while labourers and the retired tended to favour development. The response of housewives and tradesmen were near the mean for the total sample.

The response of higher educational and economic classes in favour of preservation of wilderness agrees with their responses to the previous question of values for it. These groups tend to

value wilderness as a preserve of natural ecology, and natural beauty, and a place to enjoy this natural beauty. The student occupational group seemed, in response to this question, to more highly value wilderness in a preserved state.

It should be noted that in the above analysis, only labourers and the retired were significantly more in favour of disturbance than the sample as a whole. As noted above, the majority of the sample was in favour of some level of restriction on activities in wilderness. Labourers and the retired are the same groups who tended to value wilderness only for its natural resources.

Amongst Canadian born respondents, ethnic origin had no significant effect on response to the question of activities permissible in wilderness areas. The small group of 11 continental European immigrants tended to favour development, while the three British immigrants interviewed favoured allowing only activities on the primitive end of the scale.

Of the 11 percent of respondents who said that wilderness has no value as it is (Section 3 of the questionnaire), half considered that all sorts of development activities should be allowed in such areas, and all of them would allow at least gravel roads. This result shows a consistency of response at least for those negatively inclined toward wilderness preservation.

There were few apparent inconsistencies between what respondents valued in wilderness and the sort of activities they would allow in such areas. For example, those who valued wilderness only as a source of exploitable natural resources responded to the

latter question in only the most developing and disturbing category of activities.

On the average, the activities considered permissible tended slightly toward the restrictive and preservative end of the scale for those respondents who valued wilderness for the opportunity to leave urban society, for aesthetic or ecological reasons, or as an educational or historic example. One apparent inconsistency was that of the 32 respondents who value wilderness as a wildlife preserve, six would permit activities in the two most disruptive categories.

There was very little difference in classes of activities considered permissible in wilderness between those who expressed concern for environmental problems in general, and those who said they were not concerned. There was a similar lack of difference between groups of respondents with different sorts of experience in outdoor sports or hobbies. One exception was that the three respondents who had taken part in canoe trips or trail rides wanted wilderness kept open to those activities, but not much more.

Respondents who like hunting or camping vacations tend strongly to favour keeping activities in wilderness restricted to their form of vacation recreation. Those who stay home, or travel only to visit relatives in familiar places on their vacations tend to favour development in wilderness areas.

This correlation between vacation preference and preference for management of wilderness indicates that people view wilderness in terms of recreation. Those who do not want wilderness for personal recreation do not think it should be preserved.

CHAPTER 5

SUMMARY AND CONCLUSIONS

Summary of study results

The attitudes towards wilderness of a range of individuals in Alberta were indirectly measured in this study by recording their reactions to the word 'wilderness' used in a number of questions. The interviews were not conducted in wilderness areas, and the concept was presented to the respondents only in the verbal form.

The first question in each interview determined the respondent's definition of concept of wilderness. Response to this was mainly in terms of such qualities of a place as its lack of habitation; isolation from towns and cities; and its being untouched by man; unused; or desolate. A few respondents identified wilderness specifically with forest land or mountain national parks. Thirty percent of the respondents considered that natural areas near their homes were related to their concepts of wilderness. Each respondent's own definition of wilderness was used as the basis for the remainder of the interview.

Seventy percent of the respondents reported some personal experience in places which they considered as wilderness. Most of these experiences were recreational, but 20 percent of these respondents went there in the course of their work. Apparently a significant number of Albertans have lived and worked on the frontier of the present technological civilization, opening the province to agriculture

and mineral exploitation.

Almost all of the experiences in wilderness involved travel at least a short distance away from roads, either by foot, horse, canoe, or some vehicle capable of travelling on snow or soft ground. This confirmed a general definition of wilderness as places away from roads and most works of man, although many examples involved abandoned works such as cut-over forest and old trails.

The study attempted to assess what respondents valued in wilderness areas. The most popular values were: the recreational opportunity to experience a complete change of scene from urban life; the aesthetic appeal of nature; and preservation of wildlife or examples of the natural environment. A minority, 12 percent, considered that wilderness has no value as it is. Respondents in this group feel that men should move into what are still wilderness areas and change them as necessary to exploit their natural resources, and some considered it a duty of society to do so.

When asked what sort of activities should be permitted in wilderness areas, 41 percent of the respondents would allow only primitive trails or less disruptive forms of travel. A further 27 percent would keep out paved roads and all exploitation of natural resources, giving a total of 68 percent in favour of restricting wilderness areas to recreational activities.

A number of sample population characteristics were also recorded which were cross-tabulated against the responses to questions on perceptions of, and attitudes towards wilderness in

an attempt to determine what sectors of the population perceived wilderness in what manner. A correlation was found between high education level, managerial occupation and the desire to preserve wilderness for recreation. This result probably reflects the ability of these people, who have high incomes and considerable leisure time, to travel well away from cities for vacation recreation in wilderness areas. Their normal daily lives are spent in the physical comfort of their homes, offices and personal vehicles, and they deal with many other people in their occupations and social life. Wilderness is a complete change of environment for them, because in wilderness they must rely on their own resources, without dependence on other people. In wilderness personal physical comfort and occasionally survival itself are daily challenges.

Labourers, retired farmers and respondents with a low education level tended to be the supporters of exploitation of natural resources in wilderness areas. These people do not value wilderness recreation, probably because it is not a great change from their daily lives. They are normally not completely physically comfortable, especially in their occupations, and few of them spend much time in direct dealings with people. To the poor the exploitation of physical resources is an obvious way of both increasing the wealth of society as a whole and creating employment opportunities for themselves. All the retired farmers had seen wild land turned to grazing or cultivation for the employment and enrichment of farmers, and most had participated in the process of clearing the trees and turning the sod.

Whether a person was brought up in an urban or a rural area seemed to make little difference to how he perceived wilderness. The local situation most strongly influenced respondents' reactions to natural areas near their homes. In Castor, a small town surrounded by agricultural land, few people thought of any nearby area as natural. In High Level, an isolated northern town surrounded by forest, where most residents had recently moved in from more populated areas, a significant proportion disliked this forest, which they considered their nearby natural area. In areas of Edmonton near parks, respondents liked these natural zones, but did not consider them related to the concept of wilderness, while the High Level and Rimbey respondents, in considering large forested areas in their vicinity, thought such places were related to their wilderness concept. A large minority of Edmonton respondents disliked undeveloped natural areas in the city, complaining that such places in an urban area become unsightly garbage dumps, and dangerous playgrounds for children.

The locations of the respondents' homes appeared to have some effect on the way wilderness was perceived. People who lived near forested areas for example, were less likely to consider wilderness as a completely unused area, since they were aware of man's activity and evidence of past activity almost everywhere. Residents of various parts of Edmonton and of small towns away from forests perceived wilderness in a similar manner.

Experience in such wilderness sports as canoeing, long hikes, or hunting and fishing correlated with an attitude of valuing wilderness for the opportunity to take part in such forms of recreation. Those who habitually take part in other forms of outdoor recreation had no such preferred values for wilderness.

The type of activities respondents engaged in on their vacations correlated with the values they perceive in wilderness and strongly correlated with the activities they would allow in wilderness areas. Those who would use wilderness for recreation on their vacations favoured opening wilderness to their preferred form of recreation, but in almost all cases they would prohibit all activities of a more disruptive nature in the natural environment. For example, wilderness campers would allow no more than primitive trails, while hunters would permit hunting in wilderness areas, but very few of them would allow roads of any sort. Those who do not use wilderness or near-wilderness for vacation recreation tended to be supporters of road-building and resource exploitation.

The technique used in this study, a questionnaire with free response structure, and the small sample, have made this effectively a pilot study toward development of more precise measures of perception of wilderness by the population at large. Results of this questionnaire and others like it, which show the range of responses to be expected, could be used to construct scales on which to measure reactions to specific ideas on wilderness. A more precise measure remains to be made of public perception of values in wilder-

ness, and the sorts of places where those values may be realized.

Investigators in the field of perception research have developed a number of tools for the measurement of perceived differences in general classes of land. Clayton (1968) studied the correlations of results of four separate measures of the perceived boundary between an urban and a rural area. He took the study subjects on a drive across the boundary, recording their comments on what they saw on the trip, and he asked each to identify a position of the boundary from the trip. Photos of the journey were shown in order, for the subjects to identify the boundary, and also in random sequence, for the subjects to comment on the urban and rural qualities of each photo. A list of urban and rural qualities was constructed, and each was assigned a rank of importance in identifying urban and rural areas.

Another application of photographs in perception study was that of Sonnenfeld (1967), who used reactions to photographs in a study of people's adaptation to a variety of environments. He used pairs of photos, with a limited number of basic qualitative differences between the photos in each pair. Respondents were asked simply to choose in which of the two places depicted they would prefer to live for a year or two. The photos were part of a study to determine how people of widely differing cultural background reacted to various environmental factors. Their use helped to bridge a language barrier, as well as to avoid the conceptual problem of the meanings of terms used in a questionnaire. The conceptual problem

is often a difficulty in studies of wilderness perception, and photographs could help solve it.

Luna Leopold (1969) showed how some aspects of landscape aesthetics might be scaled into numerical form, which would permit statistical comparison of the relative aesthetic value of various sites. Similar scaling might be applied to the qualities of land which make it wilderness and give it value as such, to show which places are best used as wilderness preserves.

An attempt should be made to determine what people perceive as the cost of preserving land as wilderness, and whether they are willing to pay that cost for the benefits they expect to realize in wilderness reserves. Of particular interest is the willingness of those who most value wilderness for recreation, to pay the price of lost natural resource development opportunities, and in some cases also lost wilderness recreational opportunities.

Conclusions

Preserved wilderness was perceived by most of those interviewed as a preserve of nature for their benefit. The benefit they value most is recreation, ranging from scenic viewing from a paved highway, to a long hike through wild country. Many consider recreational hunting part of the value of wilderness, while very few consider the value of natural environments to science as a reason for their preservation. A small proportion of the public perceive no value in preserving wilderness, thinking rather that men are served best by the land when they do all in their power to exploit it physically.

It would seem that preservation of some wilderness areas from most disruptive activities will be favoured by the general public. The public will be most amenable to reservation of wilderness in which some forms of recreation are permitted. These forms may be restricted in nature, such as travel only on foot or by canoe. In order to buffer such a preserve from the effects of surrounding lands with physical resource exploitation, the wilderness preserve might be immediately surrounded with an area in which less restricted recreation is allowed, such as travel by horses, or very restricted hunting and fishing.

Wilderness recreation is likely to become more popular in the future in North America, if present trends of increasing wealth, education, leisure and urbanization continue. As indicated above, some wealthy people are now looking for a real change of environment for their recreation, and wilderness, with its isolation from society and physical challenge to survival can provide that change.

It seems unlikely that preservation of large areas of land in reasonably habitable climates from all activities of man would be favoured by the general public. Respondents in this study saw value in wilderness, but this was seldom confined to the preservation of nature for its own sake, and scientific study of undisturbed natural environments was not volunteered by any of them. Nature was considered to have an aesthetic appeal to people, but no one mentioned that nature simply has a right to exist as it is. It

seems that if land in large tracts is to be preserved in a completely primitive condition, with men almost never setting foot on it, the public will need to be better educated on the values of such a reservation.

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APPENDIX A

WILDERNESS ATTITUDE STUDY, 1971

By F. J. Eley

Address _____

Age _____ Sex _____ Marital Status _____

1. What do you think of as a wilderness area? _____

_____:

2. Have you used, or visited a wilderness area? _____
(If no,) Why? _____
(If yes,): a) How did you travel in the wilderness area? _____
b) What did you do there? _____
c) How long did you spend in the wilderness area? _____
d) Did you go there alone? _____, or with friends? _____
or relatives? _____.

3) How do you feel about going into a wilderness area
alone? _____
(If yes or no,) How do you feel about spending time alone any-
where? _____

3. Do you think wilderness areas have any value as they are? _____
What value (or why not)? _____

4. What sort of activities should be allowed in wilderness areas?

(If no answer, probe with a list running the scale from 'no
people' through hiking and canoeing, motorboating, ski-doo
exploring and hunting, to oil exploration and the development
of mining towns.)

5. Do you think the remaining wild or natural areas near here have
any effect on your way of life? (In Edmonton, mention undeveloped
ravines and the river valley.) _____

-2-

Do such areas mean anything in terms of your concept of wilderness? _____

Do you think Edmonton (or name of town) is a better place to live in because of such remnants of wilderness? _____

6. Are you concerned about the ecological problems in the news these days, such as the population explosion, air and water pollution, or the disturbance of the arctic ecology? _____
7. How do you like to spend your vacations? _____

8. Do you participate in any outdoor hobbies or sports? _____

(If no,) Did you in the past? _____
9. Are you a member of any conservation group or outdoor sport club? _____
10. How long have you lived in the city? _____
Did you ever live in a rural area? _____
11. How many children in your family? _____
What are their ages? _____
12. What is your occupation? _____
Your education? _____
13. What is your ethnic origin? _____

APPENDIX B

Further tables of results

Table 3
Location of respondents' homes
versus definition of wilderness

Aspect of definition		Edmonton	High Level	Castor	Rimbey	Row total	Percent of total sample
Uninhabited	No.	33	11	11	14	69	54
	Pct.	48	16	16	20		
Isolated-away from towns	No.	29	13	6	13	61	47
	Pct.	48	21	10	21		
Untouched unchanged	No.	39	4	8	3	54	42
	Pct.	72	7	15	6		
Unused	No.	27	6	12	3	48	38
	Pct.	56	13	25	6		
Trees, bush country	No.	20	7	9	10	46	36
	Pct.	44	15	20	22		
Trackless: difficult access	No.	16	10	5	9	39	31
	Pct.	41	26	13	23		
Remote	No.	14	13	9	2	36	29
	Pct.	39	36	25	6		
Wildlife	No.	16	0	2	3	21	16
	Pct.	76	0	10	14		
Desolate; unusable	No.	6	2	1	1	10	8
	Pct.	60	20	10	10		
National Parks	No.	7	1	1	0	9	7
	Pct.	78	11	11	0		
No response	No.	3	2	1	1	7	5
	Pct.	43	29	14	14		
Total sample	No.	65	23	21	20	129	100
	Pct.	50	18	16	16	100	

Note: No. is number of cases where each aspect of wilderness definition was used. Pct. is percentage of row total.

Table 4
Aspects of respondents' definitions
of wilderness versus education

Aspect of definition	Education group				Percent of total sample
	Less than Grade 8	Grade 8 to 11	Grade 12	University	
Uninhabited	68	54	64	43	53
Isolated-away from towns	46	49	44	52	47
Untouched; unchanged	22	41	47	46	42
Unused	68	32	41	36	36
Trees, bush country	90	42	30	18	34
Trackless: minimum access	22	25	34	36	30
Remote	0	30	17	34	26
Wildlife	0	18	10	21	16
Desolate; unusable	0	5	10	12	8
National Parks	0	2	10	15	7
Number in group	7	64	31	27	129/100

Notes: 1. Numbers in main body of table are percentages of column totals.

2. Table is corrected for differences in mean complexity of definitions for each education group, as described in text.

Table 5
Attitude towards natural areas
nearby versus place brought up

Attitude to nearby natural areas					
Place brought up		Like		Dislike	Row total
		As wild	As park		
Rural	Number	19	32	9	60
	Percent	32	53	15	
Urban	Number	14	25	6	45
	Percent	31	55	13	
Total	Number	33	57	15	105
	Percent	31	55	14	100

Note: This table is modified by the removal of those who consider there are no natural areas nearby, and non-respondents to these questions.

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